"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Otto

Prolapse of the rectum in children. Cesk.pediat.16 no.3:238-241 Mr '61.

1. Klinika pediatricke chirurgie pediatricke fakulty KU v Praze, prednosta doc. MUDr. V. Kafka.
(RECTUM dis)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, O.

Aganglionic dysfunction of the intestines in newborns and infants. Rozhl. chir. 43 no.11.731-735 N '64.

1. Klinika pro detskou chirurgii fakulty detskeho lekarstvi Karlovy University v Praze, (prednosta prof. dr. V. Kafka, DrSc.).

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Otto, dr.

Disability evaluation in paralysis of the extremities. Lijecn. vjesn. 86 no.2:187-199 F'64

1. Iz Drugostepene invalidske komisije Republickog zavoda za socijalno osiguranje u Zagrebu.

S-

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Otto, dr.

Role of the general practitioner in disability insurance. Lijecn. vjesn. 86 no.5:571-580 My '64

1. Iz Drugostepene invalidske komisije Republickog zavoda za socijalno osiguranje u Zagrebu.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

Frank, S.

The common bullhead (Ameiurus nebulosus les. 1819) in waters of our country. P. 35
Prague. Narodni Museum. CASOPIS; ODDIL PRIRODOVEDNY. Praha.
Vol. 125, no. 1, 1956

Source: EEAL - LC Vol. 5. No. 10 Oct. 1956

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, St.

Nannobrycon eques (Steindachner). Wszechswiat no.5:123-124 My'61.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, S.

Trichogaster trichopterus var. sumatranus Ladiges 1933. Wszechswiat no.9:239 S '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, S.

Jordanella floridae (Goode and Bean 1879). Wszechswiat no.7/8: 204 Jl-Ag '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, S.

Pterophyllum eimekei Ahl 1928. Wszechswiat no.7/8:204 Jl-Ag '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, S.

Gymnocorymbus ternetzi (Boulenger 1895). Wszechswiat no.6: 163 Je '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, S.

Roeboides microlepis (Reinhardt 1849). Wszechswiat no.6:163-164 Je '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

YARUSTOVSKIY, A.A.; SVETLOV, M.F.; LIKIN, V.V., redaktor; BALAKIREV, V.F., redaktor; FRANK, S.I., vedushchiy redaktor; BEGICHEVA, M.N., tekhnicheskiy redaktor.

[Operation of mechanical and electrical sluice gate equipment] Ekspluatatsiia mekhanicheskogo i elektricheskogo oborudovaniia shliuzov. Moskva, Izd-vo Ministerstva rechnogo flota SSSR, 1952. 210 p. [Microfilm] (MLRA 7:11)
(Sluice gates)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, T.

FRANK, T. 1st National Economic Conference of the Textile Industry. p. 28.

Vol. 11, No. 12, June 1956.
MUSZAKI ELET
TECHNOLOGY
Budapest, Hungary

So: East European Accession, Vol. 6, No. 2, Feb. 1957

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Mechanization of the cleaning of textile factories as a means of industrial organization. Magy textil 15 no.8: 388 Ag '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Relationship of industrial management with work psychology and work physiology in the field of textile industry. Magy textil 15 no.12:563-571 D '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, T

Frank T.

Frank T. Eng. "Pumps and Injectors Used in Steam Power Stations." (Pompy i strumienice stosowance w elektrowniach cieplnych). Energetyka. No. 1-2, 1950, pp. 13-21, 9 figs. 1 tab.

The influence of temperature on the operation of the pumps, cavitation and the origin of that phenomenon in hot water pumps. Descriptions of the arrangement of pumps in steam-power plants, drive and design of circulating water pumps, characteristics of the work and design of condensate-removal pumps. Reciprocating air pumps and their design, steam and water injectors. Arrangement of pumps, boiler feed water tanks and deaerators in general use. Selecting the size of feed water pumps on the basis of characteristics of their curves. Indications for designing feed water pump installations in boiler houses.

SO: Polish Technical Abstracts No. 2, 1951

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

Frank, T.

621.311.22

4870. Layout of the main building of a power station with 60 MW turbogenerators. Z. MROCZKOWSKI and T. FRANK. *Przegląd elektrotech.*, 30, 178–82 (May 21, 1954) *In Polish.*

Relatively small floor area and size of the main building of steam power station are required by units comprising two 60 MVA 10 kV turbogenerators and 110 atm. 510°C 230 tons/hour boilers. Details of steam system, coal pulverizing plant, main electrical circuit and two alternative layouts of equipment and of the reinforced concrete buildings are given.

J. LUKASZEWICZ

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

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FRANK, T.

Completion of the largest thermoelectric power plant in Denmark, p. 49. (ENERGETYKA, Stalinogrod, Vol. 9, no. 1, Jan./Feb. 1955.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4, Jan. 1955, Uncl.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, T.

The technical book as an aid to worker and engineer.

p. 161
Vol. 9, no, 3, May/June 1955
ENERGENTYKA
Stalinogrod

SO: Monthly List of East European Accessions (EEAL) LC, VOL. 5, no. 2
Feb. 1956

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, T.

A discussion of Soviet electric power engineers on electric systems of hydroelectric power plants. p. 229.

ENERGETYKA, Vol. 9, No. 5 Sept./Oct. 1955

(Ministerstwo Energetyki) Stalinogrod.

SOURCE: EAST EUROPEAN ACCESSIONS LIST Vol. 5, No. 1 Jan. 1956

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

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FRANK, T.

Increasing the coefficient of power of equipment used inelectric-power plants. p.39.
ENERGETYKA (Ministerstwo Energetyki) Stalinogrod
Vol. 10, no. 1, Jan./Feb. 1956

So. East European Accessions List Vol. 5, No. 9 September 1956

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FRANK, T.

FRANK, T. Selection of equipment for direct current installations in electric-power plants. p.292 Vol. 32 no. 7 July 1956 Warszawa Poland

SOURCE: East European Accessions List (EEAL) Vol. 6 No. 4 April 1957

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, T.

FRANK, T. Organizational problems in light industry. p. 35.

Vol. 10, no. 6, June 1956
TOBBTERMELES
Budapest, Hungary

So: East European Accession, Vol. 6, No. 5, May 1957

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor; SZASZ, Marton; MARK, Ferenc; BOSNYAK, Tamas; LUGOSI, Karoly; FEKETE, Istvan; TOMPOS, Karoly; KABDEBO, Kornel; JAVOR, Bela; SCHEFTSIK, Jeno; VOGL, Ferenc; REITER, Gyorgy

Conference on the current tasks of the light industry workers. Munka szemle 5 no.3:5-7 Mr '61.

1. Textilipari Muszaki Tudomanyos Egyesulet Ipargazdasagi Szakosztalya titkara (for Frank). 2. Kispesti Textilgyar munkaugyi osztaly vezetoje (for Mark). 3. Konnyuipari Miniszterium Munkaugyi es Oktatasi Onallo Osztalya vezetoje (for Szasz). 4. Ujpesti Gyapjuszovogyar munkaugyi osztalya vezetoje (for Bosnyak). 5. Kender Juta es Textil Ipar munkaugyi osztaly vezetoje (for Lugosi). 6. Kobanyai Textilgyar munkaugyi osztalya vezetoje (for Fekete). 7. Konnyuipari Miniszterium Pamutipari Igazgatosaga munkaugyi osztaly vezetoje (for Tompos). 8. Magyar Pamutipar munkaugyi osztalya vezetoje (for Kabdebo). 9. Majus 1 Ruhagyar munkaugyi osztalya vezetoje (for Javor). 10. Konnyuipari Miniszterium Len-Kenderipari Igazgatosaga munkaugyi osztalya vezetoje (for Scheftsik). 11. Ruhaipari Tervezo Vallalat (for Vogl). 12. Goldberger Textilmuvek munkaugyi foosztaly vezetoje (for Reiter).

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Is plant management an organic part of the activity of Hungary's textile industry enterprises? A polemic article. Magy textil 14 no.2:84-85 F '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor; KOTWICKI, T. [translator]

Present state and tasks for the future in the field of organization of enterprises in the Hungarian textile industry. Przegl wlokien 16 no.7/8:431-433 Jl-Ag '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

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FRANK, Tibor

Organization and procedure of the technical divisions of the technical industry enterprises. Magy textil 14 no.11:515-517 N '62.

1. Hazai Pamutszovogyar.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

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FRANK, Tibor

Improvement of the transportation work at the Hungarian Cotton Weaving Factory. Kozleked kozl 18 no.48:865-867 2 D '62.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

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FRANK, Tibor

Report on the Moscow conference on the textile industry economics. Magy textil 15 no.4:188-189 Ap '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Training of textile industry engineers-economists in the Soviet Union. Magy textil 15 no.5/6:264 My-Je '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Aptitude tests carried out in the Hungarian Cotton Mill. Magy textil 15 no.7:317-318 Jl '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Organizational experience with the ...ger of the textile industry enterprises. Musz elet 18 no.9:6 25 Ap '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Possibilities for the development of industrial management within the framework of the Federation of Technical and Scientific Associations. Muss elet 18 no.21:2 10 0 '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Problems relating to the selection and employment of textile industry workers. Munka szemle 8 no.4:7-9 Ap '64.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Formation of an up-to-date organization at industrial enterprises.
Munka szemle 8 no.11:20-23 N '64.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Conditions for the formation of an adequate "operational atmosphere." Magy textil 16 no. 6:280-283 Je '64.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Is there any manpower shortage in the light industry? Husz elet 19 no.19:4 10 S '64

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Is there any shortage of manpower in the light industry?
Musz elet 19 no.21:2 8 O '64.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

Organizational tasks of management. Elelm ipar 18 no.10: 321-328 O '64.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, Tibor

New features of the work of the Federation of Technical and Scientific Associations. Musz elet 20 no.1:2 14 Ja '65.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

CISAR, ludvik, inz.; FRANK, Vaclav, inz.

Causes and analysis of the collapse of some constructions.
Poz stavby 11 no.11: 603-606 '63.

1. Technicky a zkusebni ustav stavebni, Praha.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK, W.

Structural balances in power economy. p. 570

ENERGIA ES ATOMTECHNIKA. (Energiagazdalkodasi Tudomanyos Egyesulet)
Budapest Hungary

Vol. 11, no. 9/10, Sept./Oct. 1958

Monthly list of East European Accessions (EEAI) LC., VOL. 8, no. 7, July 1959

Uncl.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

YANOVSKIY, M.I.; GAZIYEV, G.A.; NIKIFOROV, V.P.; MAKARENKO, V.G.; ZIMIN, R.A.; MARININ, P.I.; FRANK, Yu.A.

Gas chromatograph with automatic pickup of samples from a flow. Zav. lab. 31 no. 12:1526-1528 '65 (MIRA 19:1)

1. Institut khimicheskoy fiziki AN SSSR.

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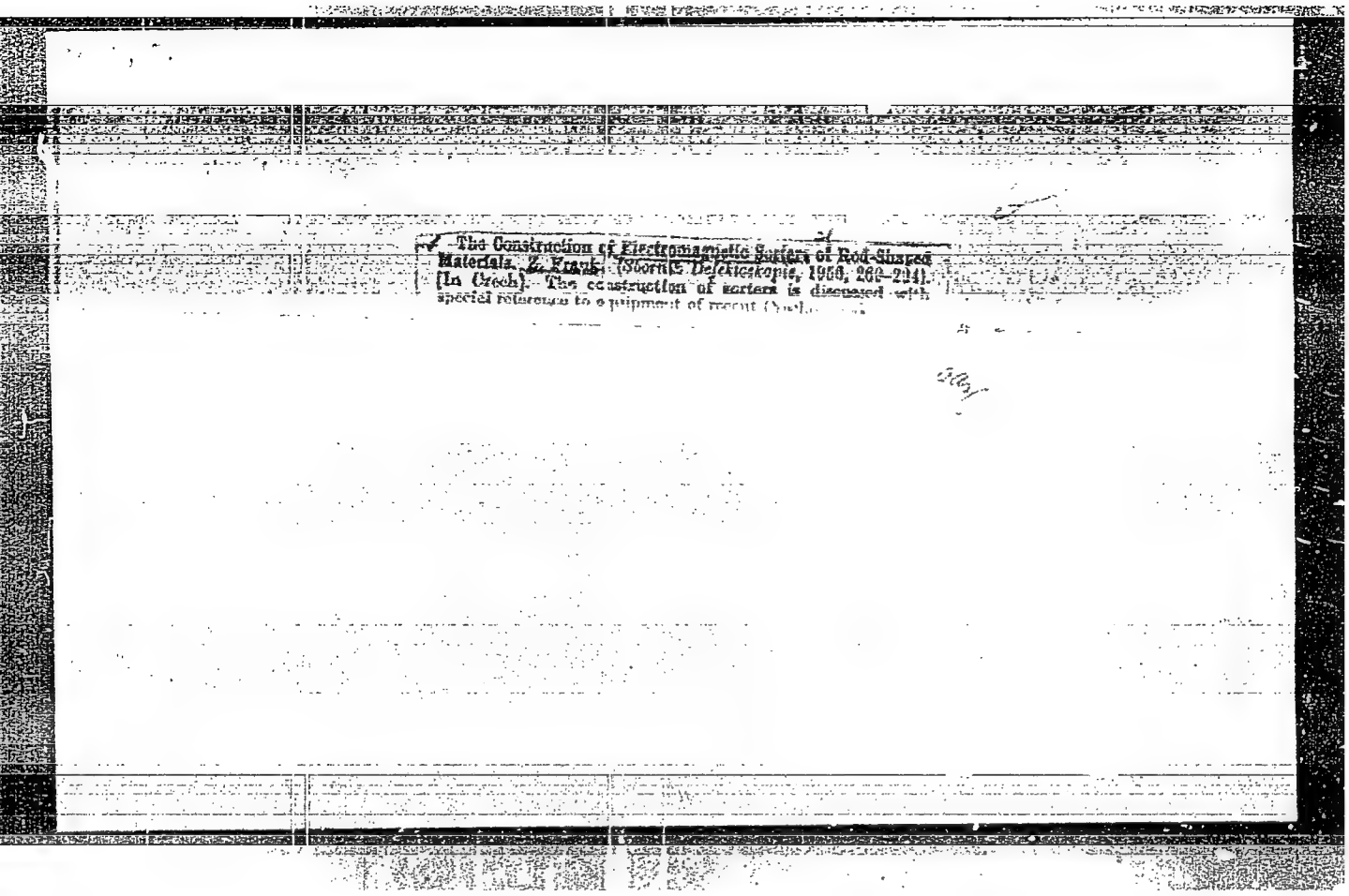

The Construction of Electromagnetic Sorters of Rod-Shaped Materials. Z. Frank. (Sborník Defektoskopie, 1968, 209–214). [In Czech]. The construction of sorters is discussed with special reference to equipment of recent (illegible)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

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DOMAC-TESAR, B.; FRANK, Z.

Malformations formed by local application of hypothermia in the second half of pregnancy in the white rats. Bul sc Youg 7 no.1/2:5-6 F-Ap '62.

1. Zavod za histologiju i embriologiju Medicinskog fakulteta, Zagreb.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

Internal Medicine

CZECHOSLOVAKIA

FRANK, Zdenek; STVERAL, Jiri; DVORAK, Josef; Institute of Aeronautical Medicine (Ustav Leteckeho Zdravotnictvi), Prague.

"Radio Waves Another Scourge of Civilization."

Prague, Radar, Vol 1, No 3, Nov 66, pp 56 - 58

Abstract: Factors influencing the medium in which people are living are discussed. Radio waves are defined as waves with frequencies between 100 kilocycles and 3,000,000 kilocycles, that is waves 1 cm to 3,000 meters long. Although these waves do not affect the senses of the body, they do have an influence on it. Thermal and non-thermal effects of the radio waves on the human organism are described. Clinical aspects of these effects are evaluated. Some of these effects are described in detail. Protection against the influence of electromagnetic fields is discussed; some peculiar effects of these fields on human beings are described. Biological effects of radio waves are discussed. 1 Table, no references.

1/1

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

Problem of the development of automation technology in the chemical industry. Automatizace 7 no.12:318-319 D '64.

1. Institute of Chemical Industry, Automation, Satalice.

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

FRANK-KAMENETSKI, A. D.

Origin of chemical elements. Biol i khim 5 no. 2:1-12 '63.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

L 17129-63 EWT(d)/EPF(n)-2/FCC(w)/BDS AFFTC/ASD/ESD-3/APGC/IJP(C)/SSD
Pu-4
ACCESSION NR: AP3004963 S/0208/63/003/004/0766/0769

65
AUTHOR: Frank-Kamenetskiy, A. D. (Moscow) 64

TITLE: Solution of a kinetic equation by the Monte Carlo method 16

SOURCE: Zhurnal vy*chisl. matematiki i matematich. fiziki, v. 3, no. 4, 1963, 766-769

TOPIC TAGS: Monte Carlo, kinetic equation, approximate solution

ABSTRACT: Use of the Monte Carlo method allows the acceleration of computation on standard high-speed machines, obtaining the solution of a kinetic equation with essentially greater accuracy than by the use of other known methods. The author considers such a solution of a kinetic equation in an example of the problem of finding the distribution of the flow of mono-energetic neutrons in a multi-zone heterogeneous cylindrical nucleus with arbitrary distribution of isotropic sources. For finding the mean flows in the zones Φ_k, the random motions N of the neutrons are tracked from the moment of "birth" to capture. For each neutron, its mileage in the given zone λ_{kv} is registered. Obviously, for large values of N

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ACCESSION NR: AP3004963

$$\bar{\Phi}_k = \frac{c}{V_k N} \sum_{\nu=1}^{N} \lambda_{k\nu}. \qquad (1)$$

where c is an arbitrary constant. The initial coordinates of the neutrons are chosen in a random fashion with respect to the given distribution of the sources. "I express my deep gratitude to I. M. Sobol' for his valuable comments." Orig. art. has: 6 formulas, 1 graph, and 1 table.

ASSOCIATION: none

SUBMITTED: 27Aug62 DATE ACQ: 30Aug63 ENCL: 00

SUB CODE: MM NO REF SOV: 003 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

VALENTA, Oldrich, inz. dr. CSc.; WEINER, Evzen, inz. dr. CSc. [deceased]

Effect of long-lasting vibration on the strength and bond of concrete. Stav cas 12 no.2:85-101 '64.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

ACCESSION NR: AP4015558 S/0089/64/016/002/0119/0122

AUTHOR: Frank-Kamenetskiy, A. D.

TITLE: Application of the Monte-Carlo method to the multigroup reactor computation

SOURCE: Atomnaya energiya, v. 16, no. 2, 1964, 119-122

TOPIC TAGS: Monte-Carlo method, multi group reactor computation, fission cross-section neutron capture, neutron scattering

ABSTRACT: The author discusses the application of the Monte-Carlo method for determination of the multiplication coefficient and the energy and space distribution of neutron fluxes in the multi-group transport approximation. The neutron scattering is assumed to be isotropic in the laboratory system. The probabilities of transitions between groups depend on both the elastic and inelastic neutron scattering. The computation of trajectories and fluxes in the group is similar to that given in the author's previous work (Zh. vy*chisl. matem. i matem. fiziki v. 3, 766 (1963)), as applied to two-

Card 1/2

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

ACCESSION NR: AP4015558

dimensional cylindrical geometry. Several generations of neutrons (original, secondary, etc.) are considered in succession. The method is justified when the ratio of the size of the active zone and the average migration path is close to unity. Thus, the Monte-Carlo method supplements the other computational method; its error is minimal when that of the diffusion approximation is maximal. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 17Jul63 DATE ACQ: 12Mar64 ENCL: 00

SUB CODE: NS NO REF SOV: 006 OTHER: 005

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413610002-4

SOV/124-58 1-1263

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 156 (USSR)

AUTHOR: Frank-Kamenetskiy, G. Kh.

TITLE: Strain Calculation for Ring-shaped Parts (Raschet deformatsiy kol'tsevykh detaley)

PERIODICAL: V sb.: Gidroturbostroyeniye. Nr 4. Moscow-Leningrad, Mashgiz, 1957, pp 195-210

ABSTRACT: Bibliographic entry

Card 1/1

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FRANK-KAMENETSKIY, L. Z.

"Partial Denervation of the Stomach in Ulcerous Diseases," Khirurgiya, No.5, 1948.

Surgical Clinic, 2nd Moscow Med. Inst. im. Stalin

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USSR/Medicine/Neurology FD-2939

Card 1/1 Pub. 17-3/23

Author : Frank- Kamenetskiy L. Z. (deceased) and Khodzhayev, Z. P.

Title : The vagus nerves as conductors of motor impulses to stomach and duodenum

Periodical : Eyul. eksp. biol. i med., 7, 10-12, July 1955

Abstract : Following earlier experiments with resection of both vagus nerves below the diaphragm, author undertook chronic experiments on dogs cutting either the left (anterior) or the right (posterior) trunk. Both nerves were cut on the controls. The left resection produced changes typical of bilateral subdiaphragmatic vagotomy, the right resection affected only the stomach fundus. There was a comparatively quick restoration of motor functions of the stomach and duodenum after resection of either nerve trunk. 1 reference, 1 USSR, 1 since 1940, photographs.

Institution : Stalinabad Medical Institute

Submitted : 20 August 1954

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BRINDLEY, G.W.; ZVYAGIN, B.B.[translator]; FRANK-KAMENETSKAYA, T.A., [translator] redaktor; TSUKERMAN, A.M., redaktor; GRIBOVA, M.P. tekhnicheskiy redaktor.

[X-ray identification and crystal structures of clay minerals; collection of articles. Translated from the English] Rentgenovskie metody opredeleniia i kristallicheskoe stroenie mineratov glin; sbornik statei. Perevod s angliiskogo B.B.Zviagina i T.A.Frank-Kamenetskoi.Pod red. i s predisl. V.A.Frank-Kamenetskogo. Moskva, izd-vo inostrannoi lit-ry, 1955. 4o2 p. (MLRA 8:11)
(Clay) (X-rays)

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FRANK-KAMENETSKAYA, T.A.

GRIM, Ralph E.; ZVYAGIN, B.B. [translator]; MIKHEYEVA, I.V. [translator]; MIKHEYEV, V.I. [translator]; RAZHEGAYEVA, G.I. [translator]; FRANK-KAMENETSKAYA, T.A. [translator]; FRANK-KAMENETSKIY, V.A., redaktor; YAKOVLENKO, M.Ye., redaktor; DUMBRE, I.Ya., tekhnicheskiy redaktor

[Clay mineralogy. Translated from the English] Mineralogiia glin. Perevod angliiskogo B.B.Zviagina i dr. Pod red. i s predisl. V.A. Frank-Kamenetskogo. Moskva, Izd-vo inostrannoi lit-ry, 1956. 454 p. (MLRA 9:10)
(Clay)

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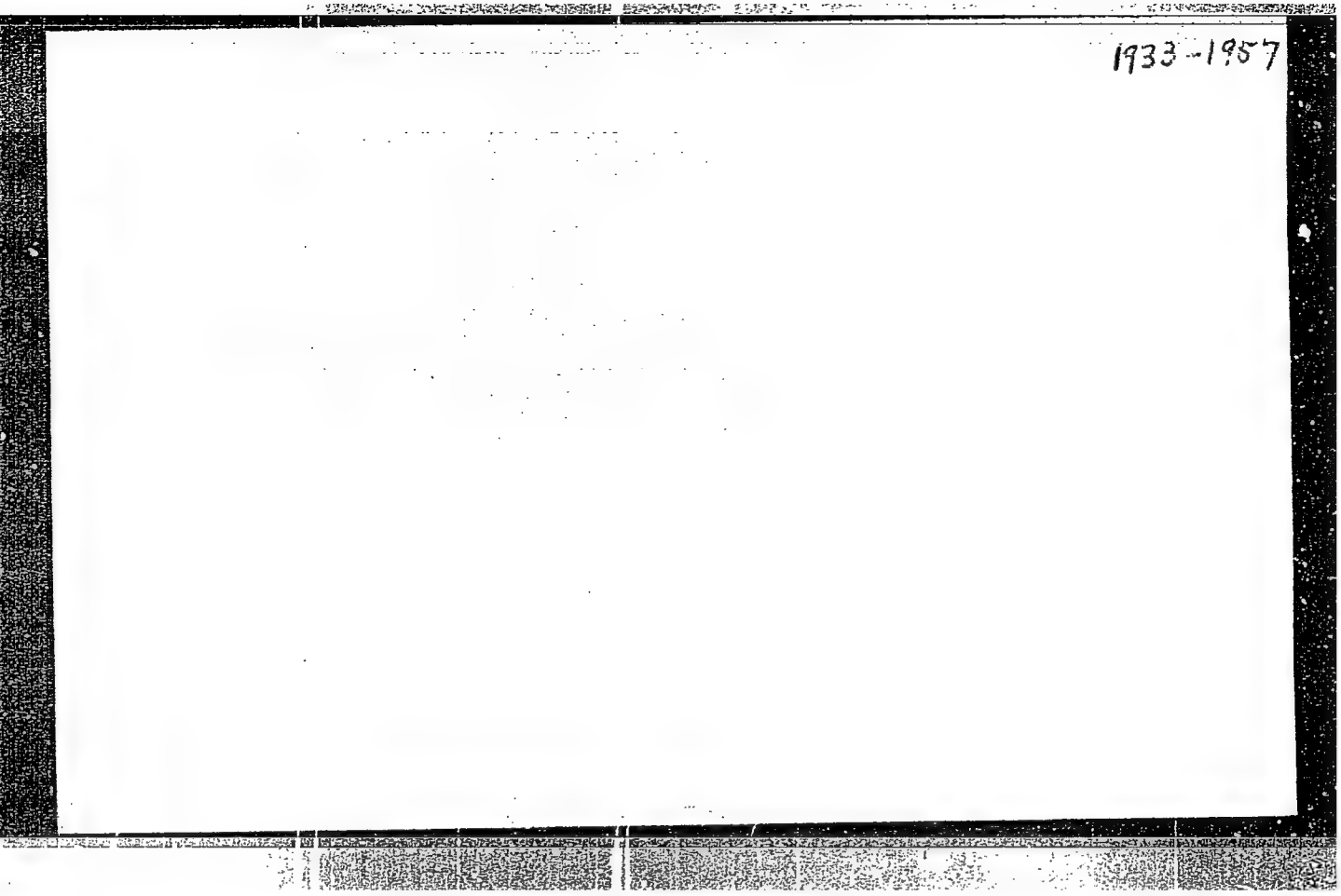

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FRANK-KAMENETSKIY, D. A.

"Recovering Sulfite Concentrates," USSR Patent 31, 132, Spetember 30, 1933

Concentrating zinc vapors. D. A. Frank-Kamenetzkii. Russ. 31,756, Feb. 28, 1934. Zn vapors are toned by passing through a tower filled with coke.

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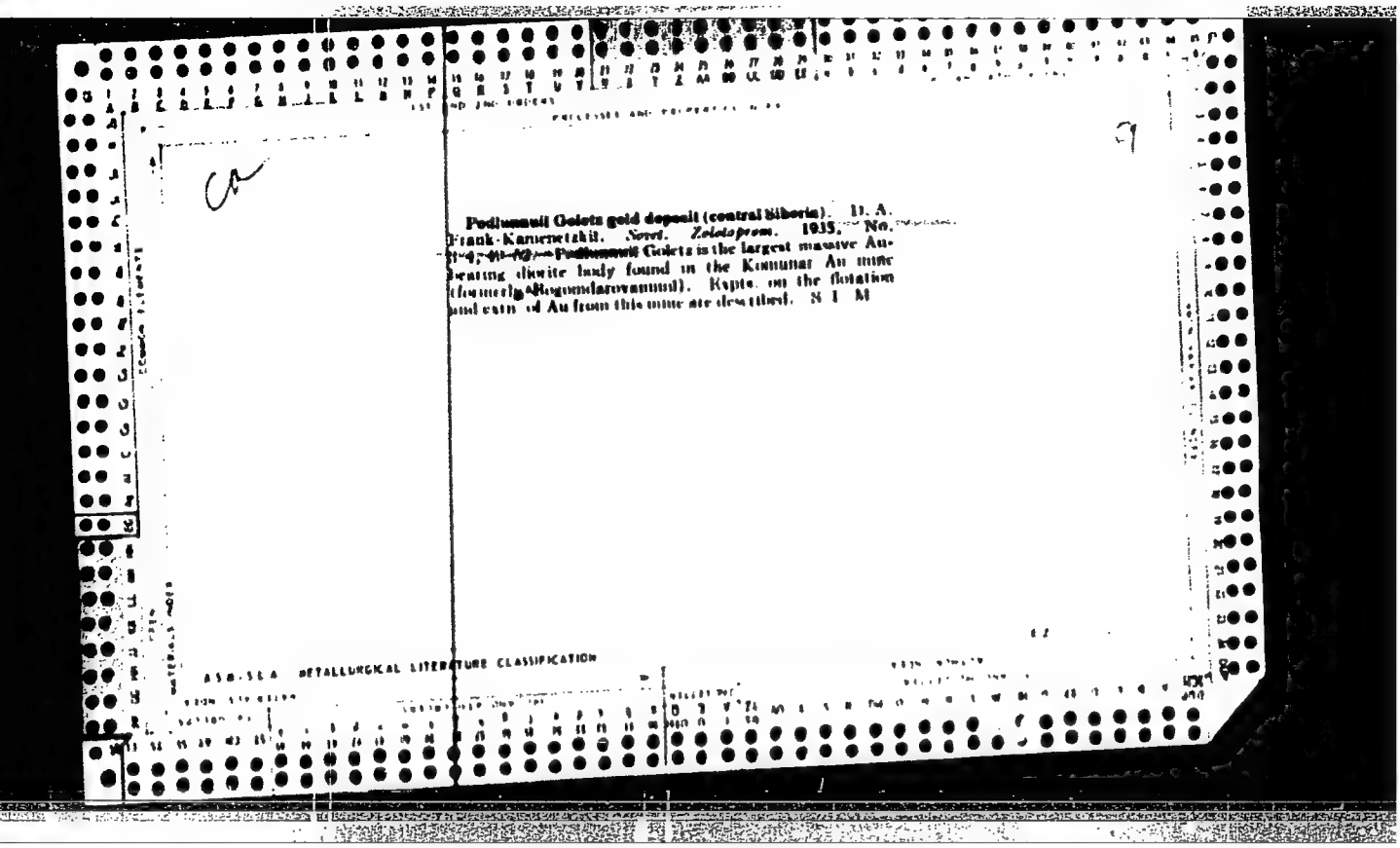

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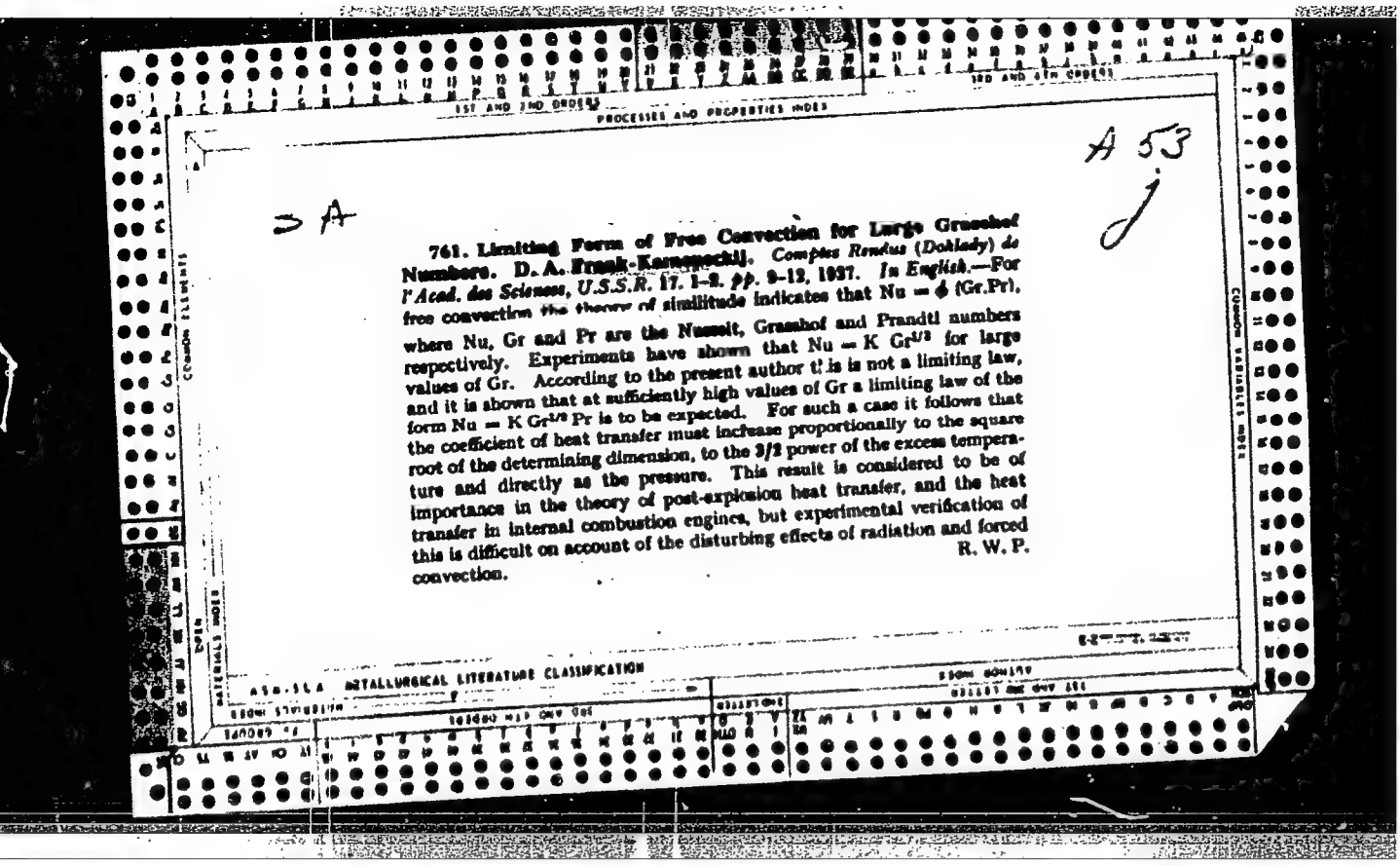

761. **Limiting Form of Free Convection for Large Grashof Numbers.** D. A. **Frank-Kamenetskiĭ.** *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 17. 1–2. *pp.* 9–12, 1937. *In English.*—For free convection the theory of similitude indicates that $Nu = \phi$ (Gr.Pr), where Nu, Gr and Pr are the Nusselt, Grashof and Prandtl numbers respectively. Experiments have shown that $Nu = K\,Gr^{1/3}$ for large values of Gr. According to the present author this is not a limiting law, and it is shown that at sufficiently high values of Gr a limiting law of the form $Nu = K\,Gr^{1/2}\,Pr$ is to be expected. For such a case it follows that the coefficient of heat transfer must increase proportionally to the square root of the determining dimension, to the 3/2 power of the excess temperature and directly as the pressure. This result is considered to be of importance in the theory of post-explosion heat transfer, and the heat transfer in internal combustion engines, but experimental verification of this is difficult on account of the disturbing effects of radiation and forced convection.

R. W. P.

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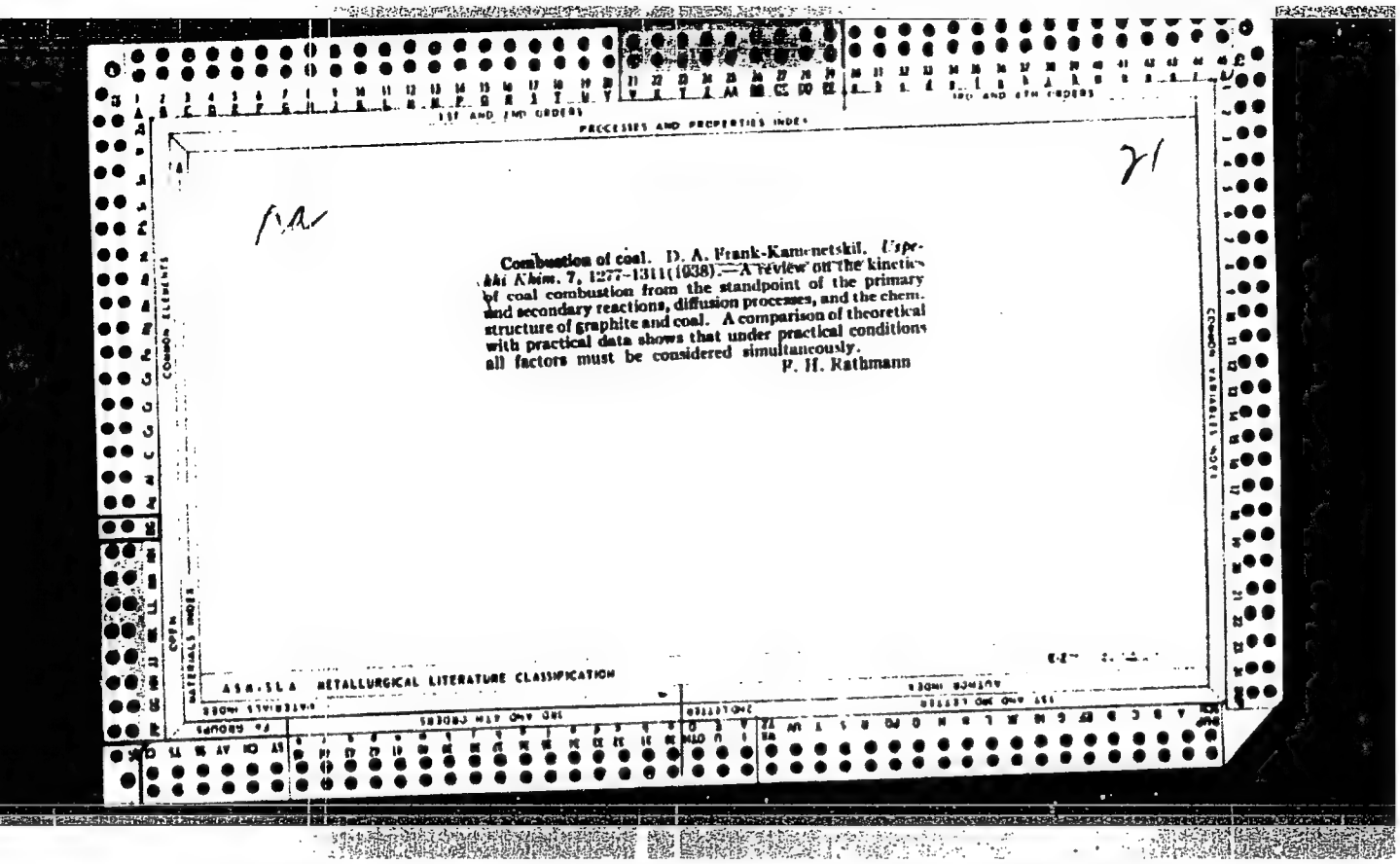

Combustion of coal. D. A. Frank-Kamenetskii. *Uspekhi Khim.* 7, 1277–1311(1938).—A review on the kinetics of coal combustion from the standpoint of the primary and secondary reactions, diffusion processes, and the chem. structure of graphite and coal. A comparison of theoretical with practical data shows that under practical conditions all factors must be considered simultaneously.
P. H. Rathmann

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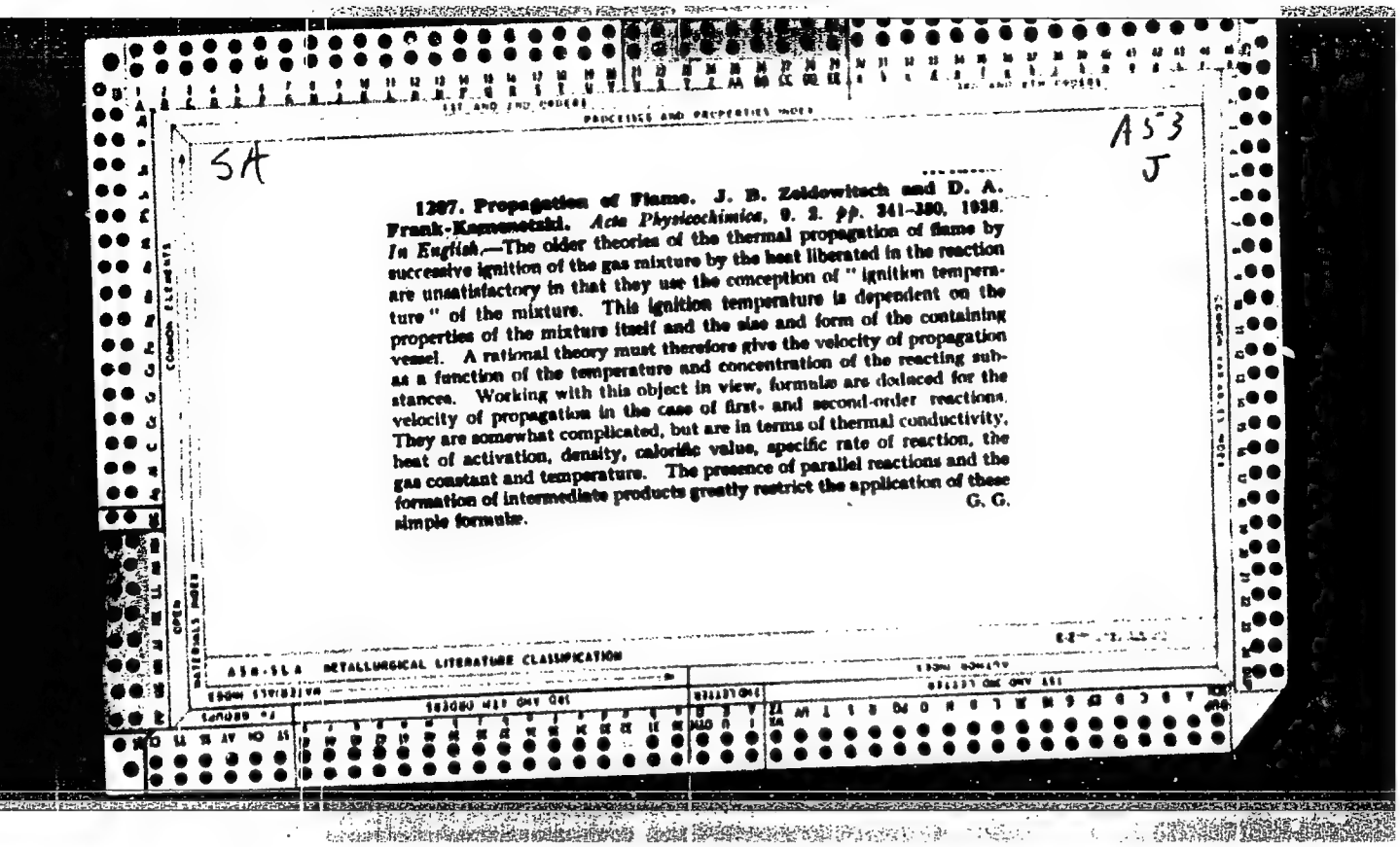

5A

A53
J

1207. **Propagation of Flame.** J. B. Zeldowitsch and D. A. Frank-Kamenetzki. *Acta Physicochimica*, 9. 2. pp. 341–350, 1938. *In English.*—The older theories of the thermal propagation of flame by successive ignition of the gas mixture by the heat liberated in the reaction are unsatisfactory in that they use the conception of "ignition temperature" of the mixture. This ignition temperature is dependent on the properties of the mixture itself and the size and form of the containing vessel. A rational theory must therefore give the velocity of propagation as a function of the temperature and concentration of the reacting substances. Working with this object in view, formulæ are deduced for the velocity of propagation in the case of first- and second-order reactions. They are somewhat complicated, but are in terms of thermal conductivity, heat of activation, density, calorific value, specific rate of reaction, the gas constant and temperature. The presence of parallel reactions and the formation of intermediate products greatly restrict the application of these simple formulæ. G. G.

A56-55A METALLURGICAL LITERATURE CLASSIFICATION

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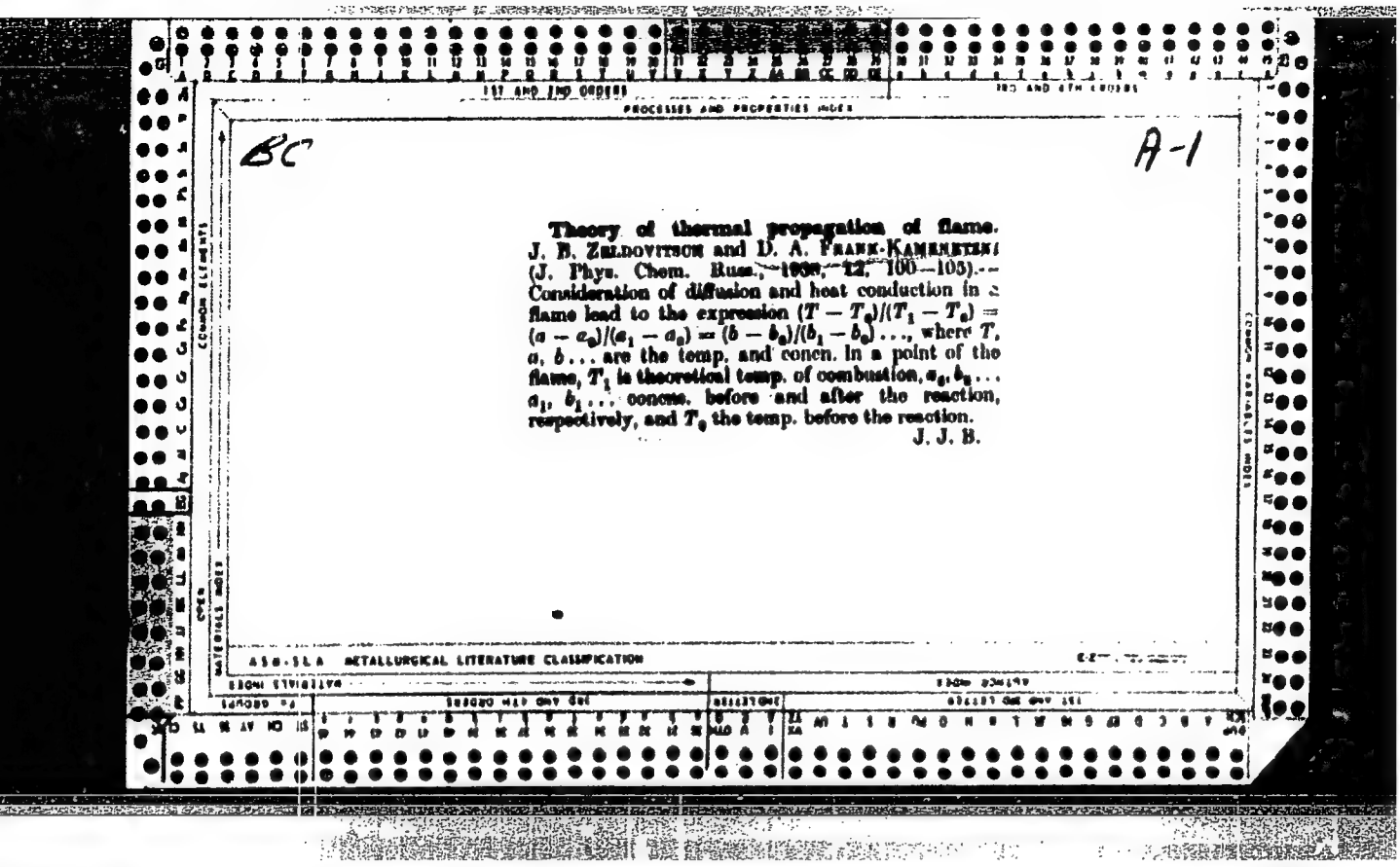

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A-1

Theory of thermal propagation of flame. J. B. Zeldovitsch and D. A. Frank-Kamenetzki (J. Phys. Chem. Russ., 1938, 12, 100—105).—Consideration of diffusion and heat conduction in a flame lead to the expression $(T - T_0)/(T_1 - T_0) = (a - a_0)/(a_1 - a_0) = (b - b_0)/(b_1 - b_0) \ldots$, where T, a, $b \ldots$ are the temp. and concn. in a point of the flame, T_1 is theoretical temp. of combustion, a_0, $b_0 \ldots$ a_1, $b_1 \ldots$ concns. before and after the reaction, respectively, and T_0 the temp. before the reaction.

J. J. B.

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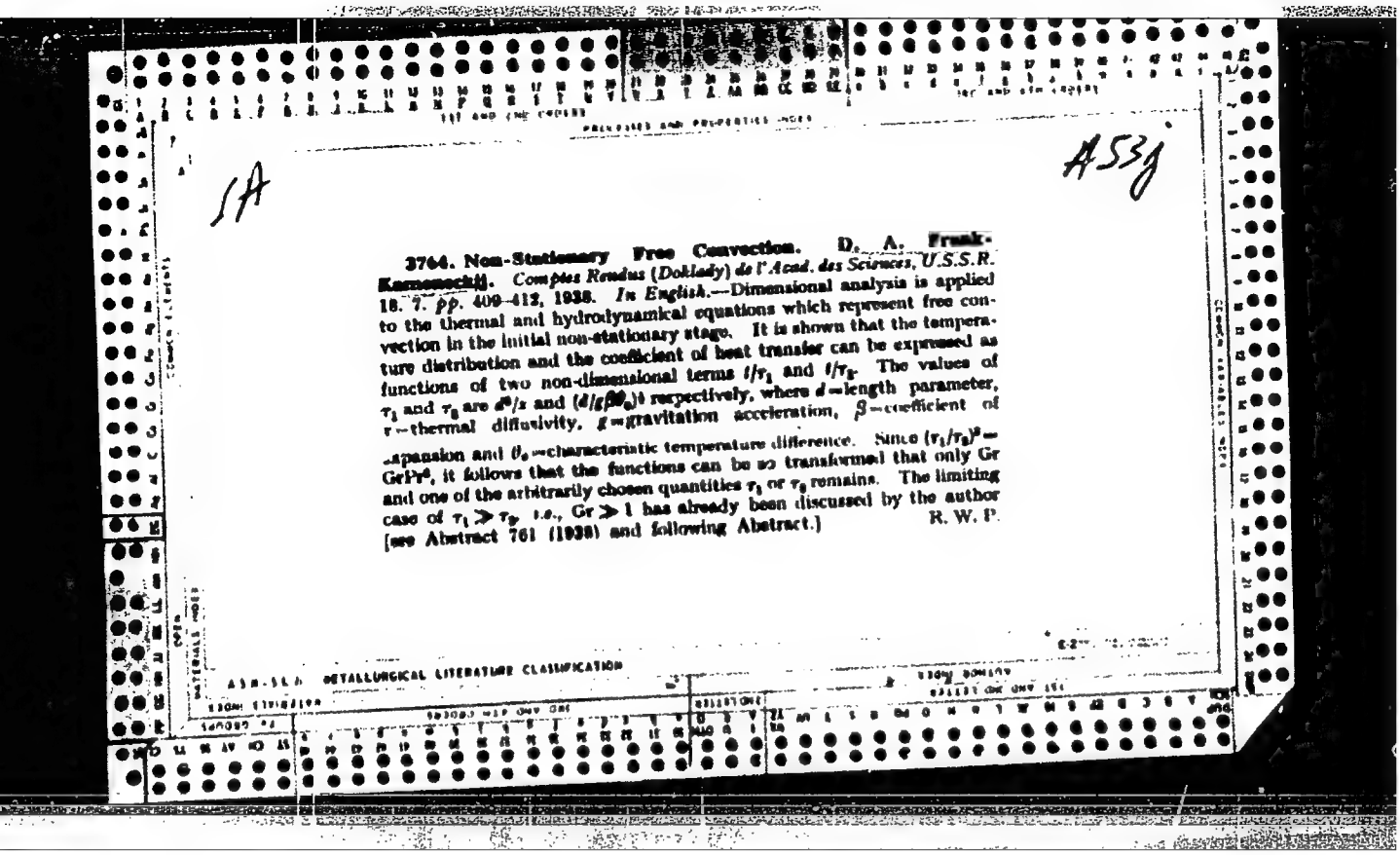

1A

A53j

3764. **Non-Stationary Free Convection.** D. A. **Frank-Kamenetskij.** *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 18. 7. *pp.* 409–412, 1938. *In English.*—Dimensional analysis is applied to the thermal and hydrodynamical equations which represent free convection in the initial non-stationary stage. It is shown that the temperature distribution and the coefficient of heat transfer can be expressed as functions of two non-dimensional terms t/τ_1 and t/τ_2. The values of τ_1 and τ_2 are $d^2/\varkappa$ and $(d/g\beta\theta_0)^{\frac{1}{2}}$ respectively, where d = length parameter, $\varkappa$ = thermal diffusivity, g = gravitation accleration, β = coefficient of expansion and θ_0 = characteristic temperature difference. Since $(\tau_1/\tau_2)^2 = GrPr^2$, it follows that the functions can be so transformed that only Gr and one of the arbitrarily chosen quantities τ_1 or τ_2 remains. The limiting case of $\tau_1 \gg \tau_2$, *i.e.*, $Gr \gg 1$ has already been discussed by the author [see Abstract 761 (1938) and following Abstract.] R. W. P.

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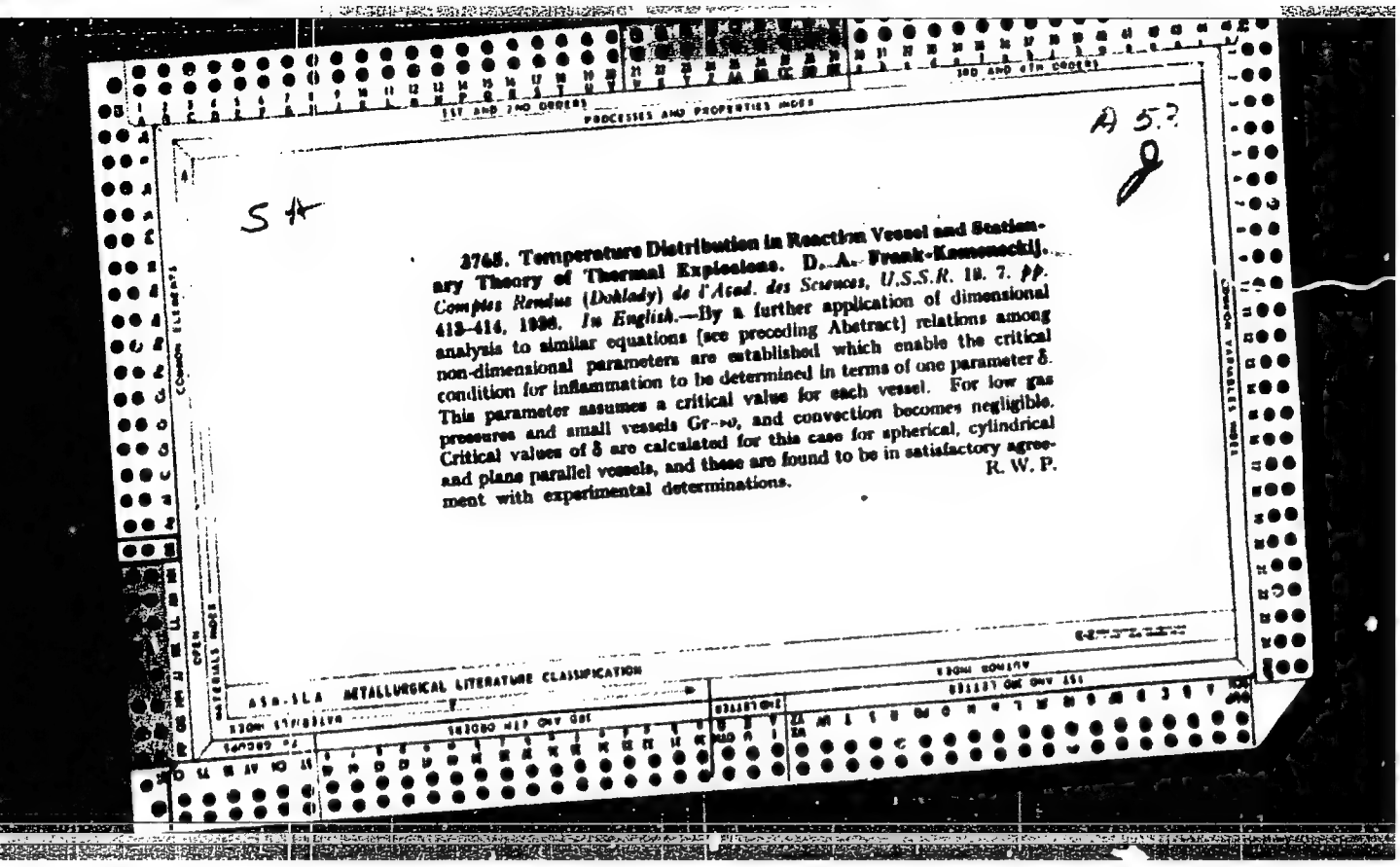

3765. **Temperature Distribution in Reaction Vessel and Stationary Theory of Thermal Explosions.** D. A. Frank-Kamenetskij. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 10. 7. *pp.* 413–414, 1936. *In English.*—By a further application of dimensional analysis to similar equations [see preceding Abstract] relations among non-dimensional parameters are established which enable the critical condition for inflammation to be determined in terms of one parameter δ. This parameter assumes a critical value for each vessel. For low gas pressures and small vessels $Gr \cdot Pr$, and convection becomes negligible. Critical values of δ are calculated for this case for spherical, cylindrical and plane parallel vessels, and these are found to be in satisfactory agreement with experimental determinations. R. W. P.

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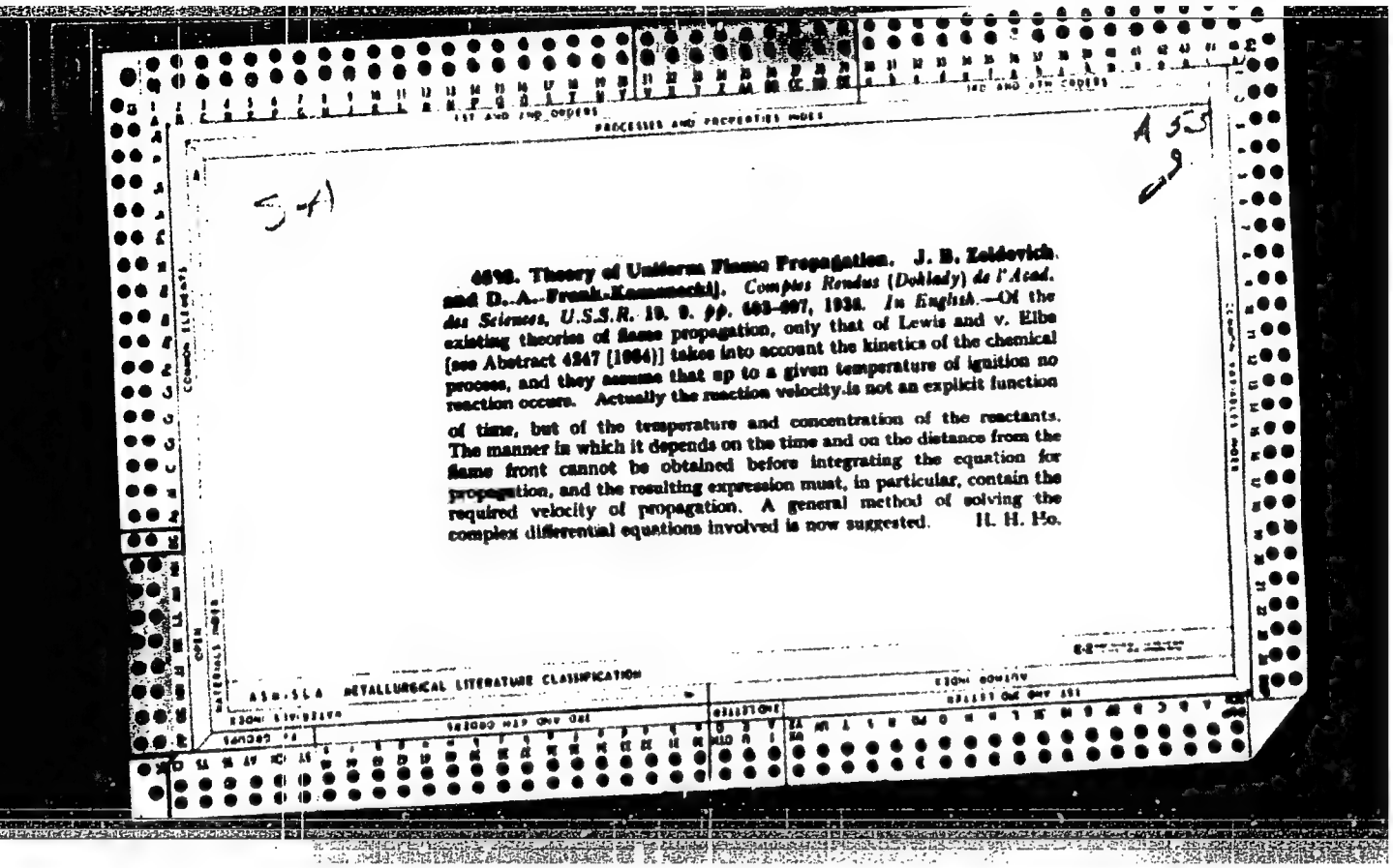

4618. **Theory of Uniform Flame Propagation.** J. B. Zeldovich and D. A. Frank-Kamenetskii. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* **19**. 9. *pp.* 693–697, 1938. *In English.*—Of the existing theories of flame propagation, only that of Lewis and v. Elbe [see Abstract 4247 (1934)] takes into account the kinetics of the chemical process, and they assume that up to a given temperature of ignition no reaction occurs. Actually the reaction velocity is not an explicit function of time, but of the temperature and concentration of the reactants. The manner in which it depends on the time and on the distance from the flame front cannot be obtained before integrating the equation for propagation, and the resulting expression must, in particular, contain the required velocity of propagation. A general method of solving the complex differential equations involved is now suggested. H. H. Ho.

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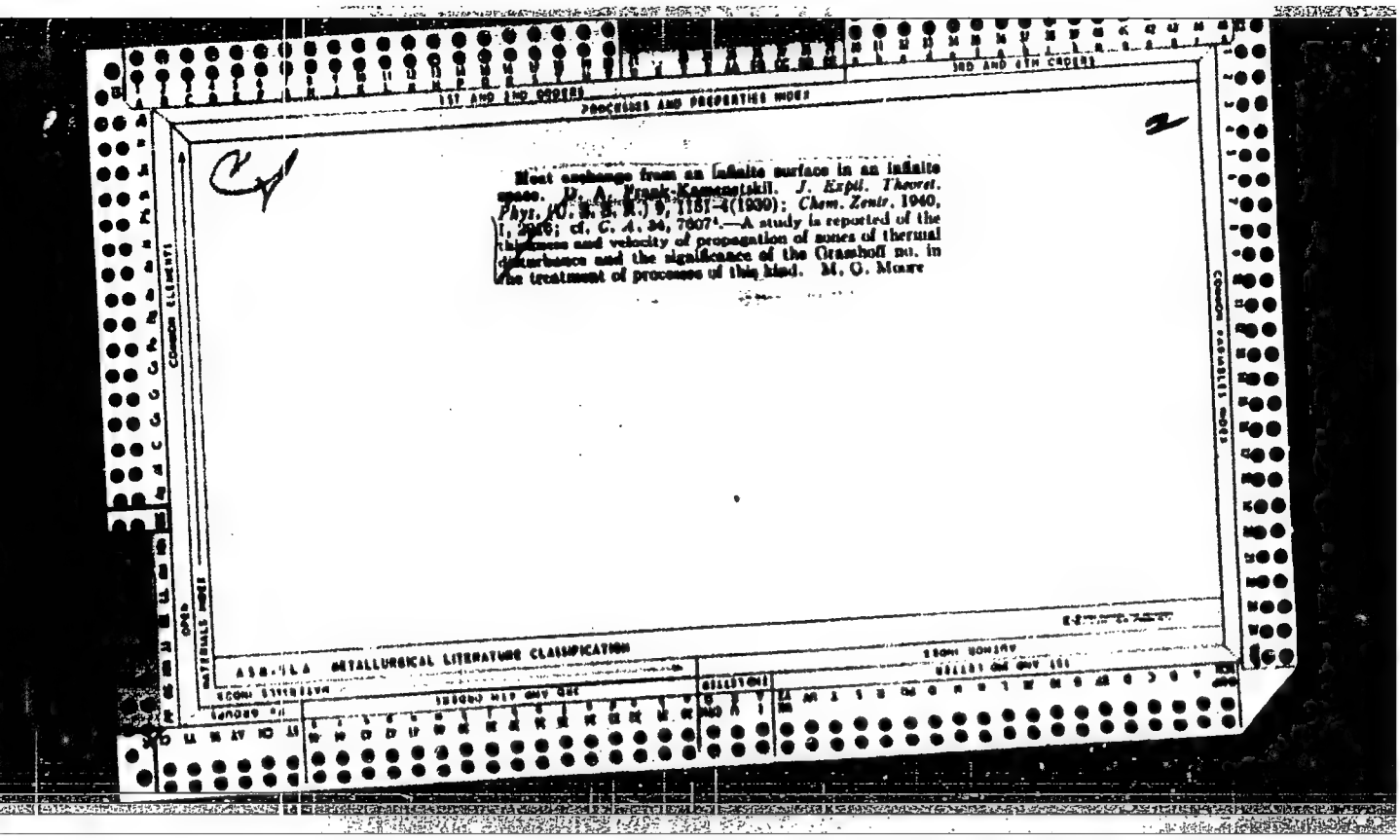

Heat exchange from an infinite surface in an infinite space. D. A. Frank-Kamenetskii. *J. Exptl. Theoret. Phys. (U. S. S. R.)* 9, 1151–4(1939); *Chem. Zentr.* 1940, I, 2016; cf. *C. A.* 34, 7607⁴.—A study is reported of the thickness and velocity of propagation of zones of thermal disturbance and the significance of the Grashoff no. in the treatment of processes of this kind. M. G. Moore

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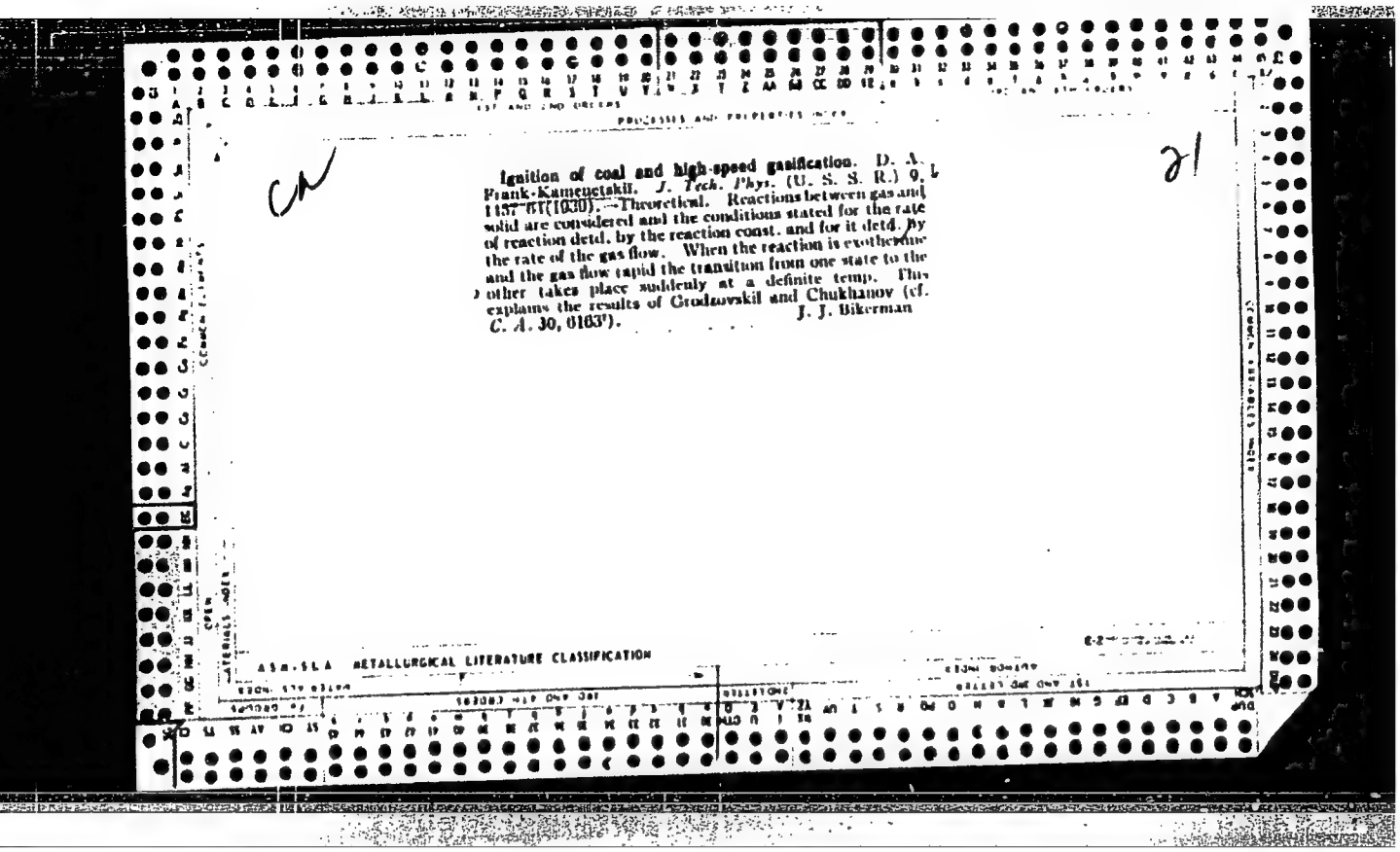

Ignition of coal and high-speed gasification. D. A. Frank-Kamenetskii. *J. Tech. Phys.* (U. S. S. R.) 9, 1457–61 (1939). —Theoretical. Reactions between gas and solid are considered and the conditions stated for the rate of reaction detd. by the reaction const. and for it detd. by the rate of the gas flow. When the reaction is exothermic and the gas flow rapid the transition from one state to the other takes place suddenly at a definite temp. This explains the results of Grodzovskii and Chukhanov (cf. *C. A.* 30, 0163[3]). J. J. Bikerman

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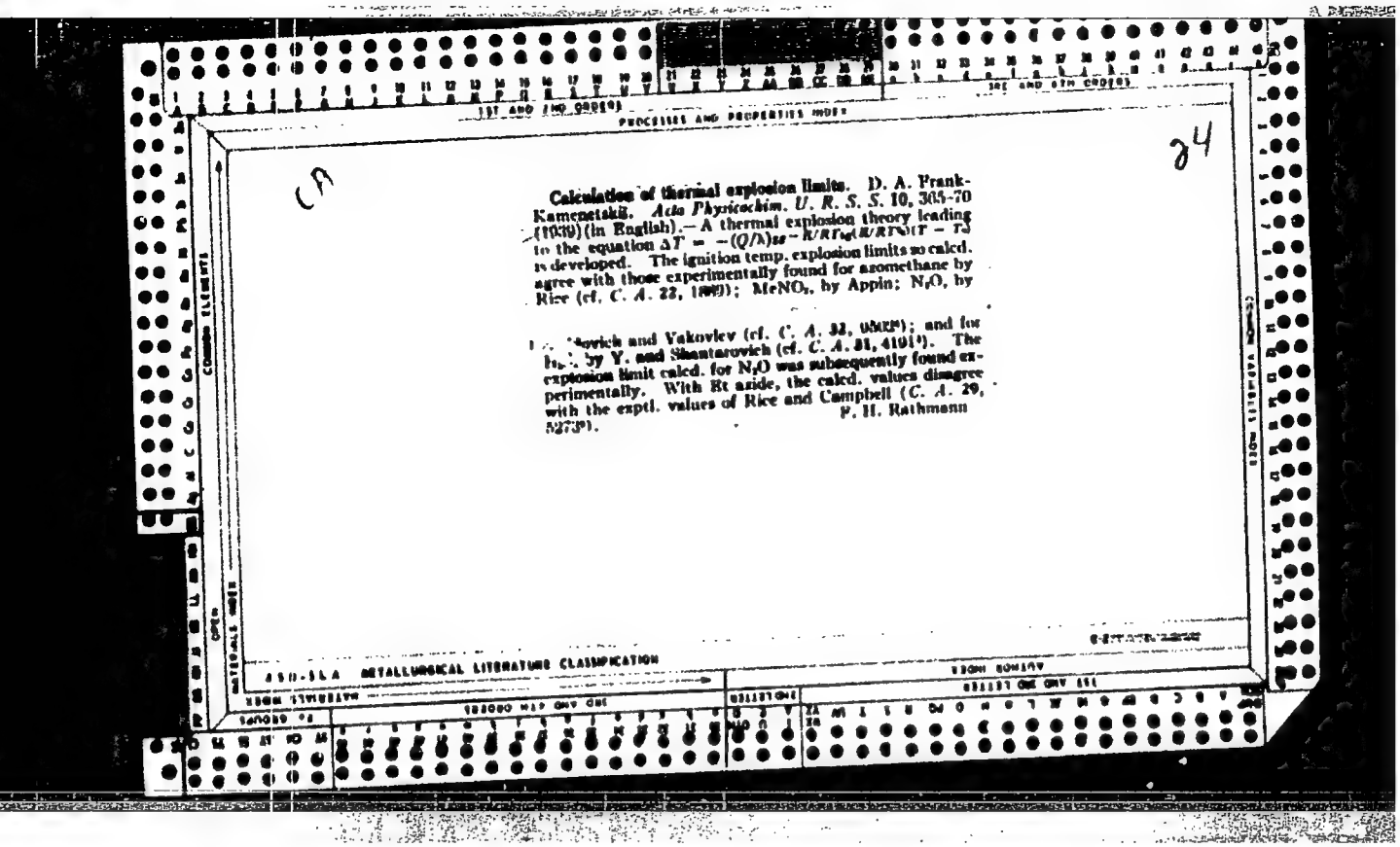

Calculation of thermal explosion limits. D. A. Frank-Kamenetskii. *Acta Physicochim. U. R. S. S.* 10, 365-70 (1939) (in English).—A thermal explosion theory leading to the equation $\Delta T = -(Q/\lambda)s - RT^2s(E/RT^2)(T - T_0$ is developed. The ignition temp. explosion limits so calcd. agree with those experimentally found for azomethane by Rice (cf. *C. A.* 22, 1809); $MeNO_2$, by Appin; N_2O, by

[illegible]ovich and Vakovlev (cf. *C. A.* 32, 9382[illegible]); and for [illegible]y Y. and Shantarovich (cf. *C. A.* 31, 4191[illegible]). The explosion limit calcd. for N_2O was subsequently found experimentally. With Et azide, the calcd. values disagree with the exptl. values of Rice and Campbell (*C. A.* 29, 5273[illegible]).

P. H. Rathmann

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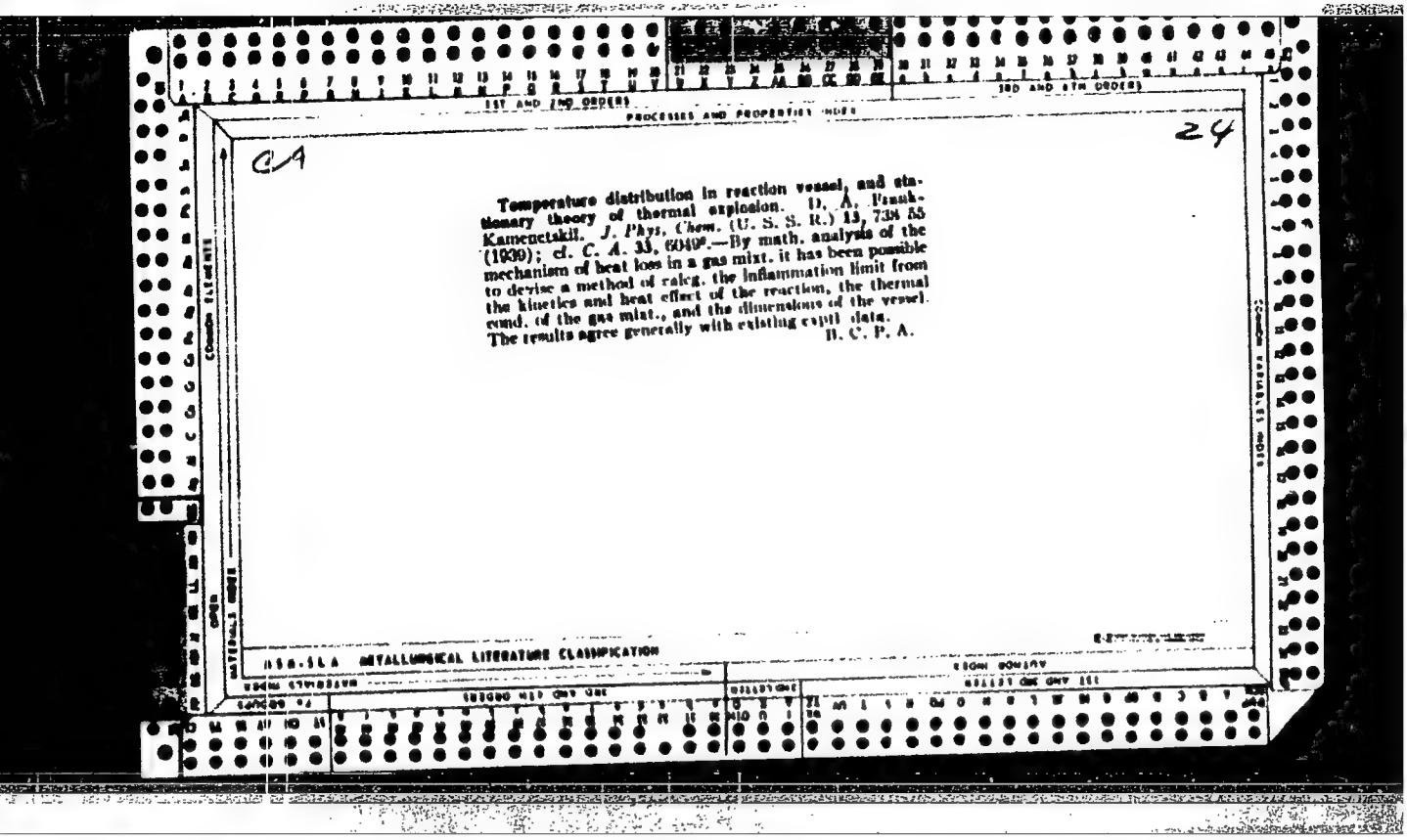

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24

Temperature distribution in reaction vessel, and stationary theory of thermal explosion. D. A. Frank-Kamenetskii. *J. Phys. Chem.* (U. S. S. R.) 13, 738-55 (1939); cf. *C. A.* 33, 6040⁹.—By math. analysis of the mechanism of heat loss in a gas mixt. it has been possible to devise a method of calcg. the inflammation limit from the kinetics and heat effect of the reaction, the thermal cond. of the gas mixt., and the dimensions of the vessel. The results agree generally with existing expil. data.
B. C. P. A.

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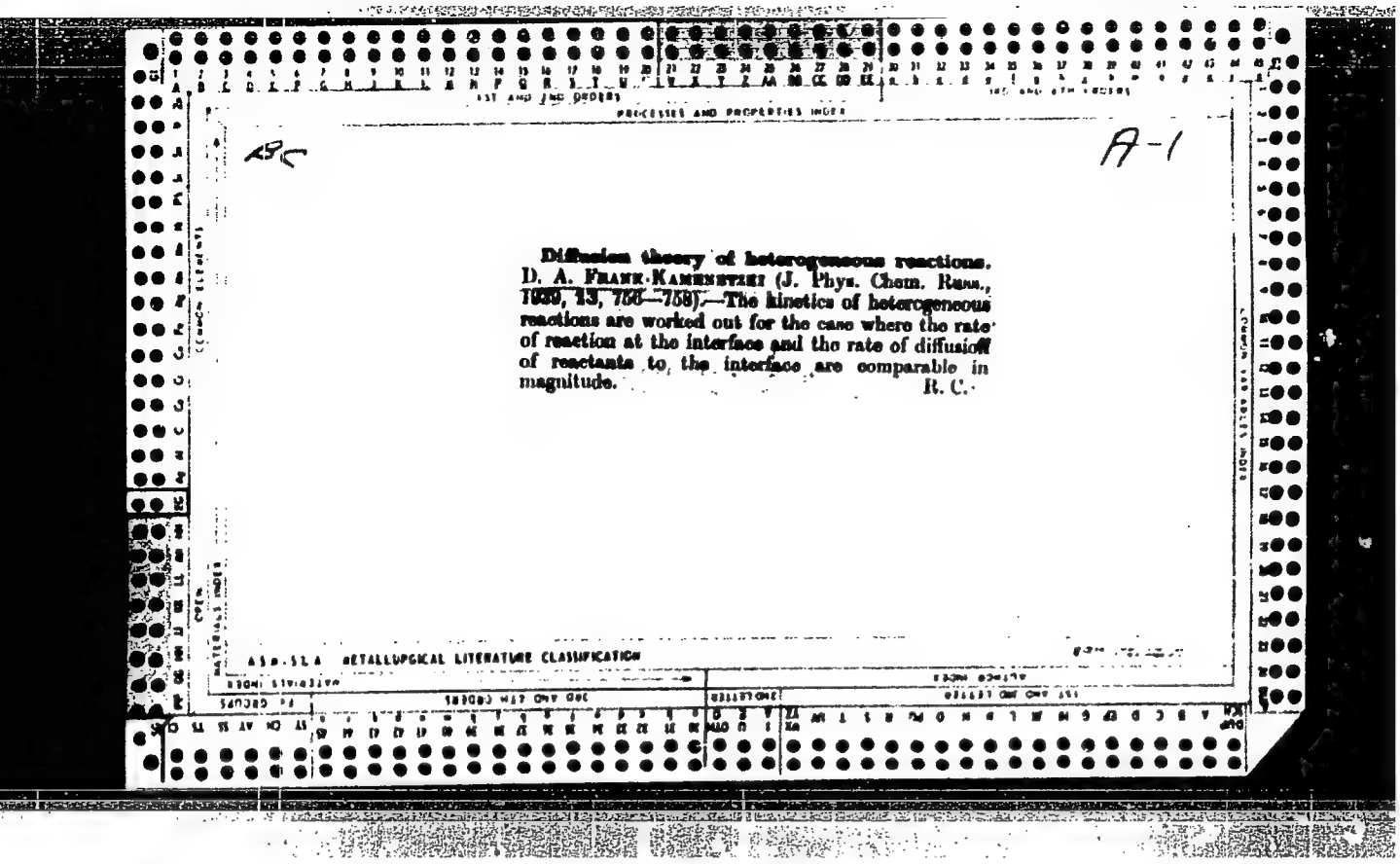

A-1

Diffusion theory of heterogeneous reactions. D. A. FRANK-KAMENETZKI (J. Phys. Chem. Russ., 1939, 13, 756—758).—The kinetics of heterogeneous reactions are worked out for the case where the rate of reaction at the interface and the rate of diffusion of reactants to the interface are comparable in magnitude. R. C.

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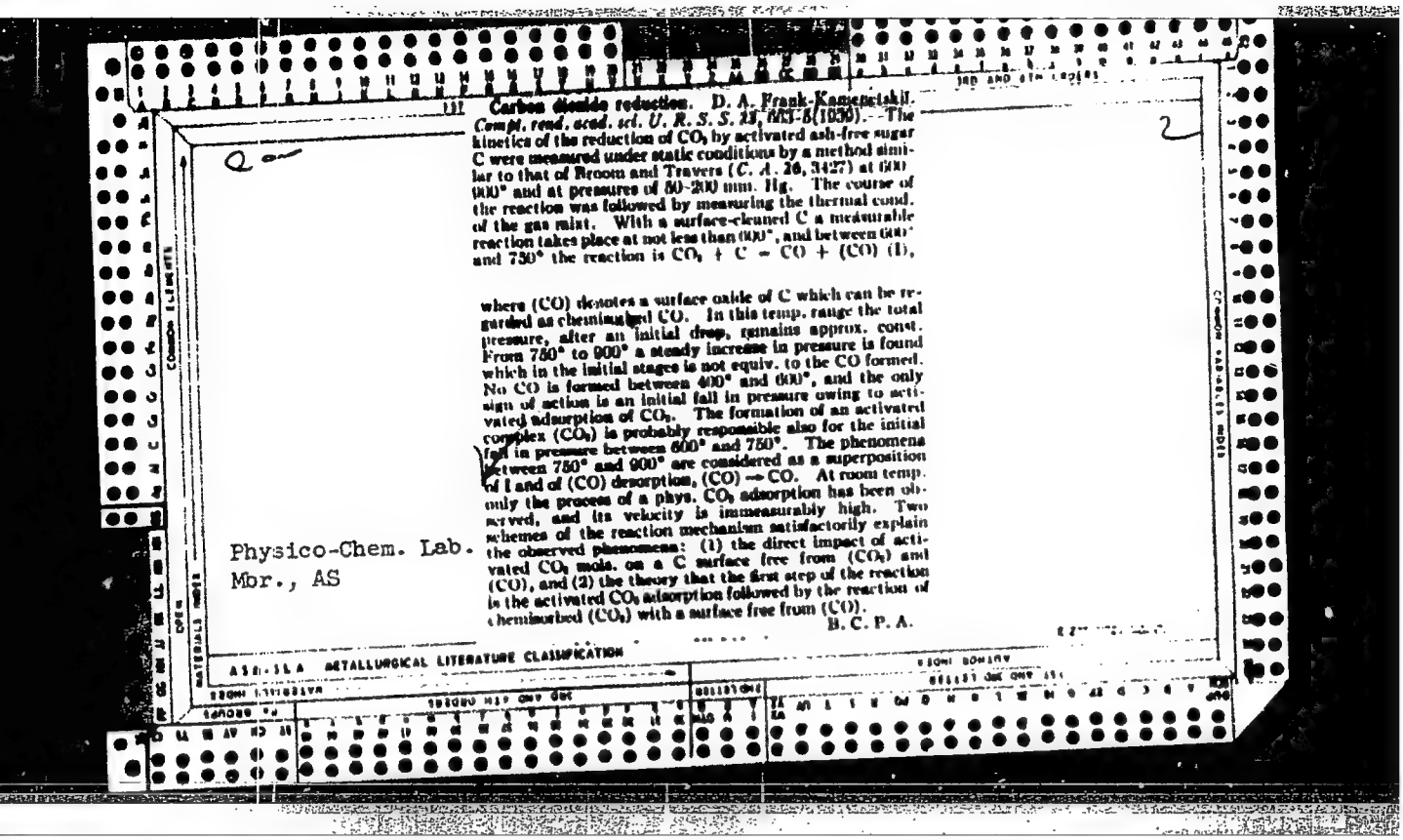

Carbon dioxide reduction. D. A. Frank-Kamenetskii. *Compt. rend. acad. sci. U. R. S. S.* 25, 663-5(1939).—The kinetics of the reduction of CO_2 by activated ash-free sugar C were measured under static conditions by a method similar to that of Broom and Travers (*C. A.* 26, 3427) at 600-900° and at pressures of 80-200 mm. Hg. The course of the reaction was followed by measuring the thermal cond. of the gas mixt. With a surface-cleaned C a measurable reaction takes place at not less than 600°, and between 600° and 750° the reaction is $CO_2 + C = CO + (CO)$ (I),

where (CO) denotes a surface oxide of C which can be regarded as chemisorbed CO. In this temp. range the total pressure, after an initial drop, remains approx. const. From 750° to 900° a steady increase in pressure is found which in the initial stages is not equiv. to the CO formed. No CO is formed between 400° and 600°, and the only sign of action is an initial fall in pressure owing to activated adsorption of CO_2. The formation of an activated complex (CO_2) is probably responsible also for the initial fall in pressure between 600° and 750°. The phenomena between 750° and 900° are considered as a superposition of I and of (CO) desorption, (CO) → CO. At room temp. only the process of a phys. CO_2 adsorption has been observed, and its velocity is immeasurably high. Two schemes of the reaction mechanism satisfactorily explain the observed phenomena: (1) the direct impact of activated CO_2 mols. on a C surface free from (CO_2) and (CO), and (2) the theory that the first step of the reaction is the activated CO_2 adsorption followed by the reaction of chemisorbed (CO_2) with a surface free from (CO).

B. C. P. A.

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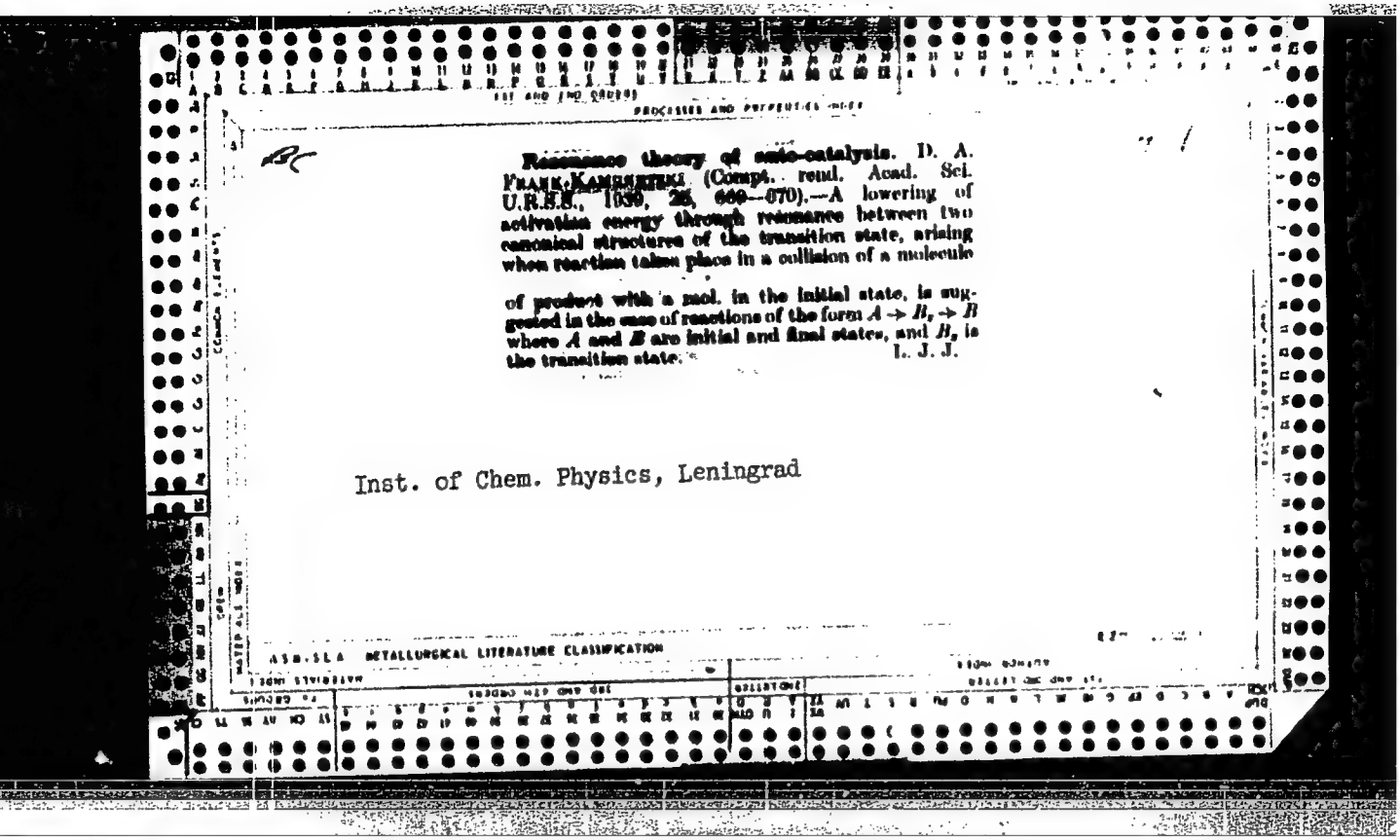

Resonance theory of auto-catalysis. D. A. FRANK-KAMENETSKI (Compt. rend. Acad. Sci. U.R.S.S., 1939, 25, 669–670).—A lowering of activation energy through resonance between two canonical structures of the transition state, arising when reaction takes place in a collision of a molecule of product with a mol. in the initial state, is suggested in the case of reactions of the form $A \rightarrow B, \rightarrow B$ where A and B are initial and final states, and B_1 is the transition state. L. J. J.

Inst. of Chem. Physics, Leningrad

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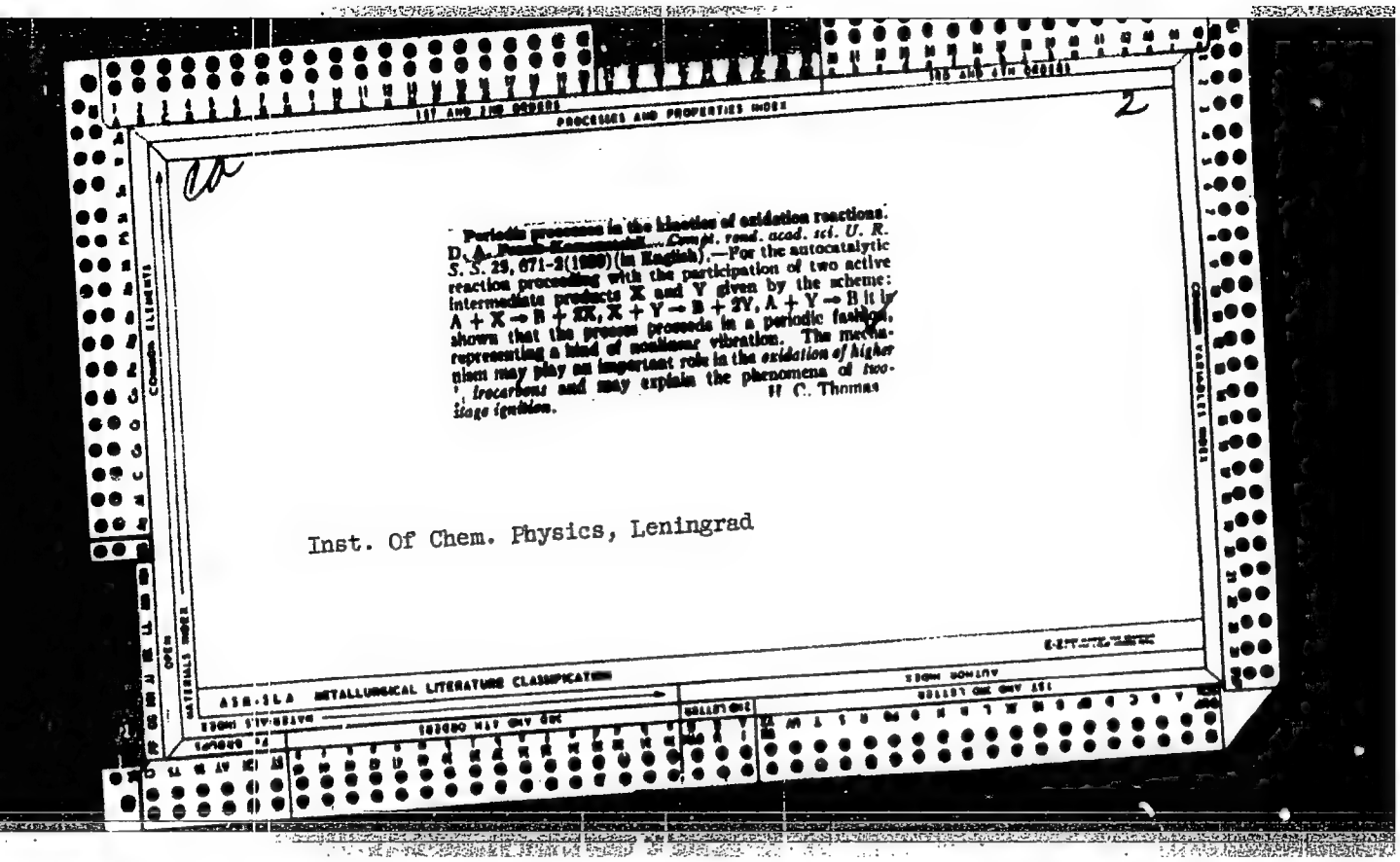

PROCESSES AND PROPERTIES INDEX

2

Periodic processes in the kinetics of oxidation reactions. D. A. Frank-Kamenetskiĭ. *Compt. rend. acad. sci. U. R. S. S.* 28, 671-2(1940)(in English).—For the autocatalytic reaction proceeding with the participation of two active intermediate products X and Y given by the scheme: $A + X \rightarrow R + 2X$, $X + Y \rightarrow R + 2Y$, $A + Y \rightarrow R$ it is shown that the process proceeds in a periodic fashion, representing a kind of nonlinear vibration. The mechanism may play an important role in the *oxidation of higher hydrocarbons* and may explain the phenomena of *two-stage ignition*.

H. C. Thomas

Inst. Of Chem. Physics, Leningrad

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FRANK-KAMENETSKIY, D. A.

"A Thermodynamic Analogy of the Uncertainty Principle," Zhur. Eksper. i Teoret. 10, No. 6, 1940. pp. 700-702

Inst. Chemical Physics, Leningrad.

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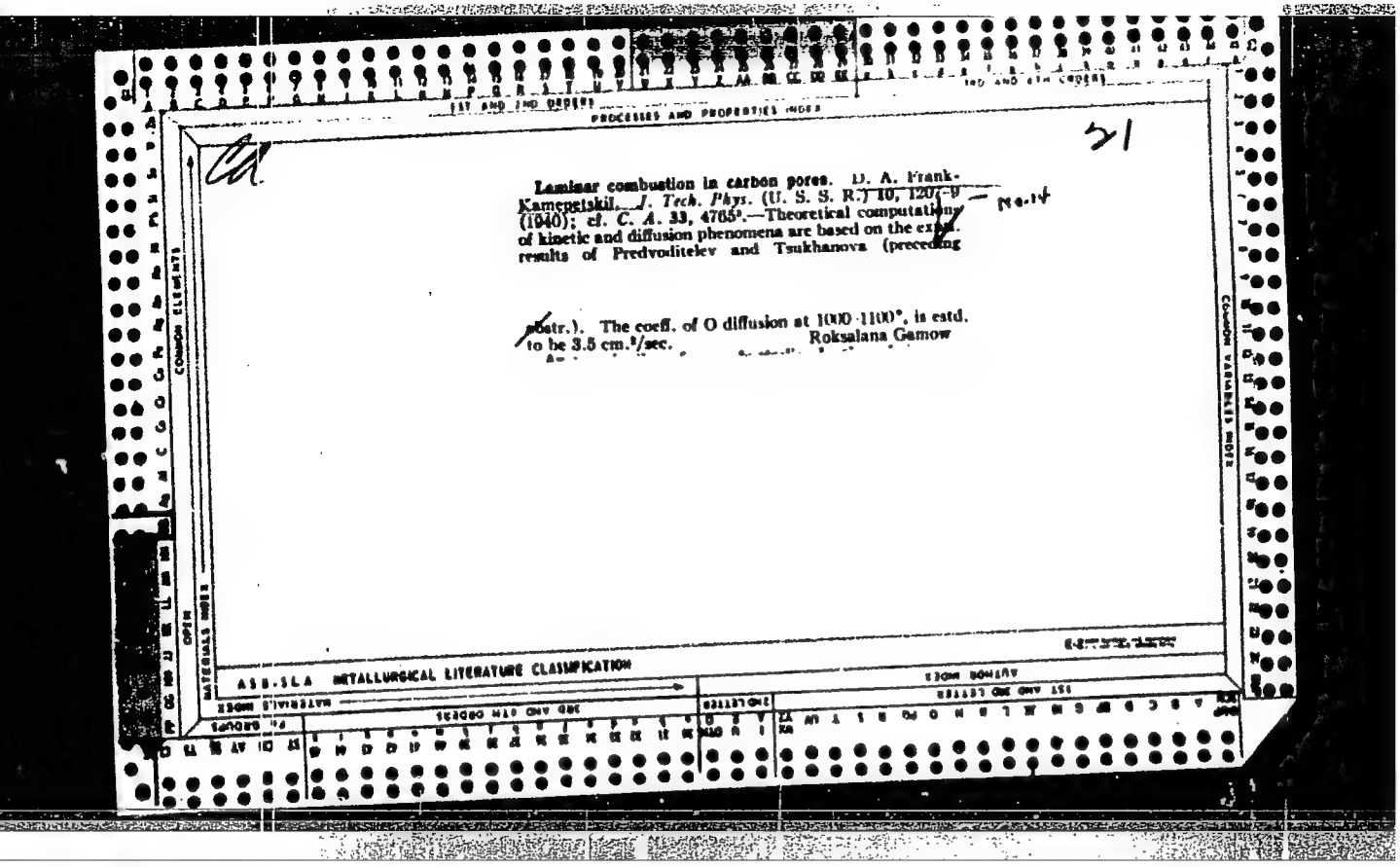

PROCESSES AND PROPERTIES INDEX

21

Laminar combustion in carbon pores. D. A. Frank-Kamenetskii. *J. Tech. Phys.* (U. S. S. R.) 10, 120(-9 (1940); cf. *C. A.* 33, 4765⁹.—Theoretical computations of kinetic and diffusion phenomena are based on the exptl. results of Predvoditelev and Tsukhanova (preceding abstr.). The coeff. of O diffusion at 1000-1100°, is estd. to be 3.5 cm.²/sec. Roksalana Gamow

No. 14

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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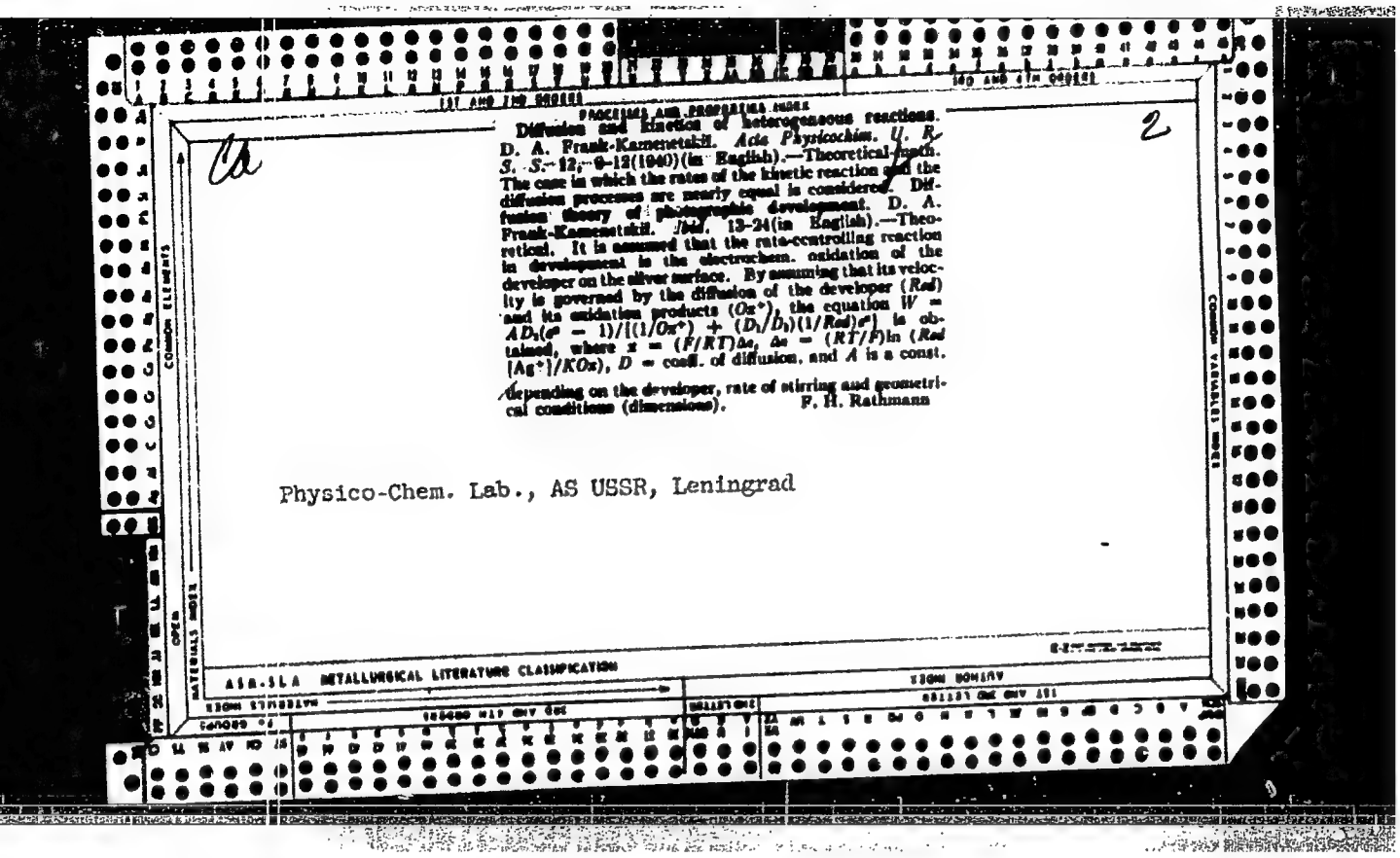

PROCESSES AND PROPERTIES INDEX

Diffusion and kinetics of heterogeneous reactions. D. A. Frank-Kamenetskii. *Acta Physicochim. U. R. S. S.* 12, 9-12(1940)(in English).—Theoretical. The case in which the rates of the kinetic reaction and the diffusion processes are nearly equal is considered. Diffusion theory of photographic development. D. A. Frank-Kamenetskii. *Ibid.* 13-24(in English).—Theoretical. It is assumed that the rate-controlling reaction in development is the electrochem. oxidation of the developer on the silver surface. By assuming that its velocity is governed by the diffusion of the developer (*Red*) and its oxidation products (*Ox*$^+$), the equation $W = AD_1(e^x - 1)/[(1/Ox^+) + (D_1/b_1)(1/Red)e^x]$ is obtained, where $x = (F/RT)\Delta\epsilon$, $\Delta\epsilon = (RT/F)\ln(Red[Ag^+]/KOx)$, D = coeff. of diffusion, and A is a const. depending on the developer, rate of stirring and geometrical conditions (dimensions). F. H. Rathmann

Physico-Chem. Lab., AS USSR, Leningrad

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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FRANK-KAMENETSKIY, D. A.

"Diffusion Theory of Photographic Development," Acta Physicochemica URSS, Vol. 12, pp 13-24, 1940

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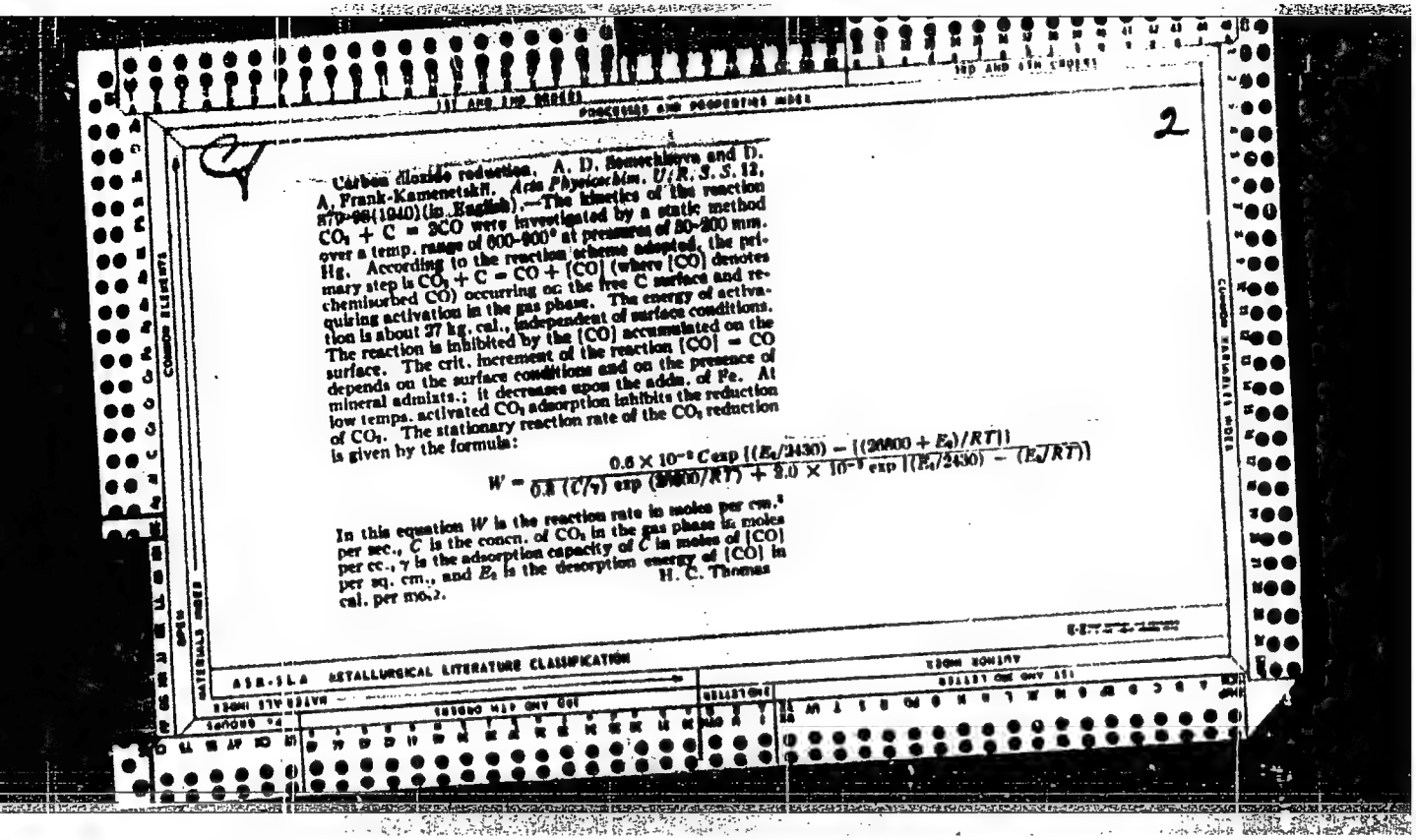

Carbon dioxide reduction. A. D. Semechkova and D. A. Frank-Kamenetskii. *Acta Physicochim. U.R.S.S.* 12, 879-98(1940)(in English).—The kinetics of the reaction $CO_2 + C = 2CO$ were investigated by a static method over a temp. range of 600–900° at pressures of 80–200 mm. Hg. According to the reaction scheme adopted, the primary step is $CO_2 + C = CO + [CO]$ (where [CO] denotes chemisorbed CO) occurring on the free C surface and requiring activation in the gas phase. The energy of activation is about 27 kg. cal., independent of surface conditions. The reaction is inhibited by the [CO] accumulated on the surface. The crit. increment of the reaction [CO] = CO depends on the surface conditions and on the presence of mineral admixts.; it decreases upon the addn. of Fe. At low temps. activated CO_2 adsorption inhibits the reduction of CO_2. The stationary reaction rate of the CO_2 reduction is given by the formula:

$$W = \frac{0.6 \times 10^{-6} C \exp\left[(E_a/2430) - \left[(20800 + E_a)/RT\right]\right]}{0.8\,(C/\gamma)\exp\left(-20800/RT\right) + 2.0 \times 10^{-9} \exp\left[(E_a/2430) - (E_a/RT)\right]}$$

In this equation W is the reaction rate in moles per cm.^{2} per sec., C is the concn. of CO_2 in the gas phase in moles per cc., γ is the adsorption capacity of C in moles of [CO] per sq. cm., and E_a is the desorption energy of [CO] in cal. per mole.

H. C. Thomas

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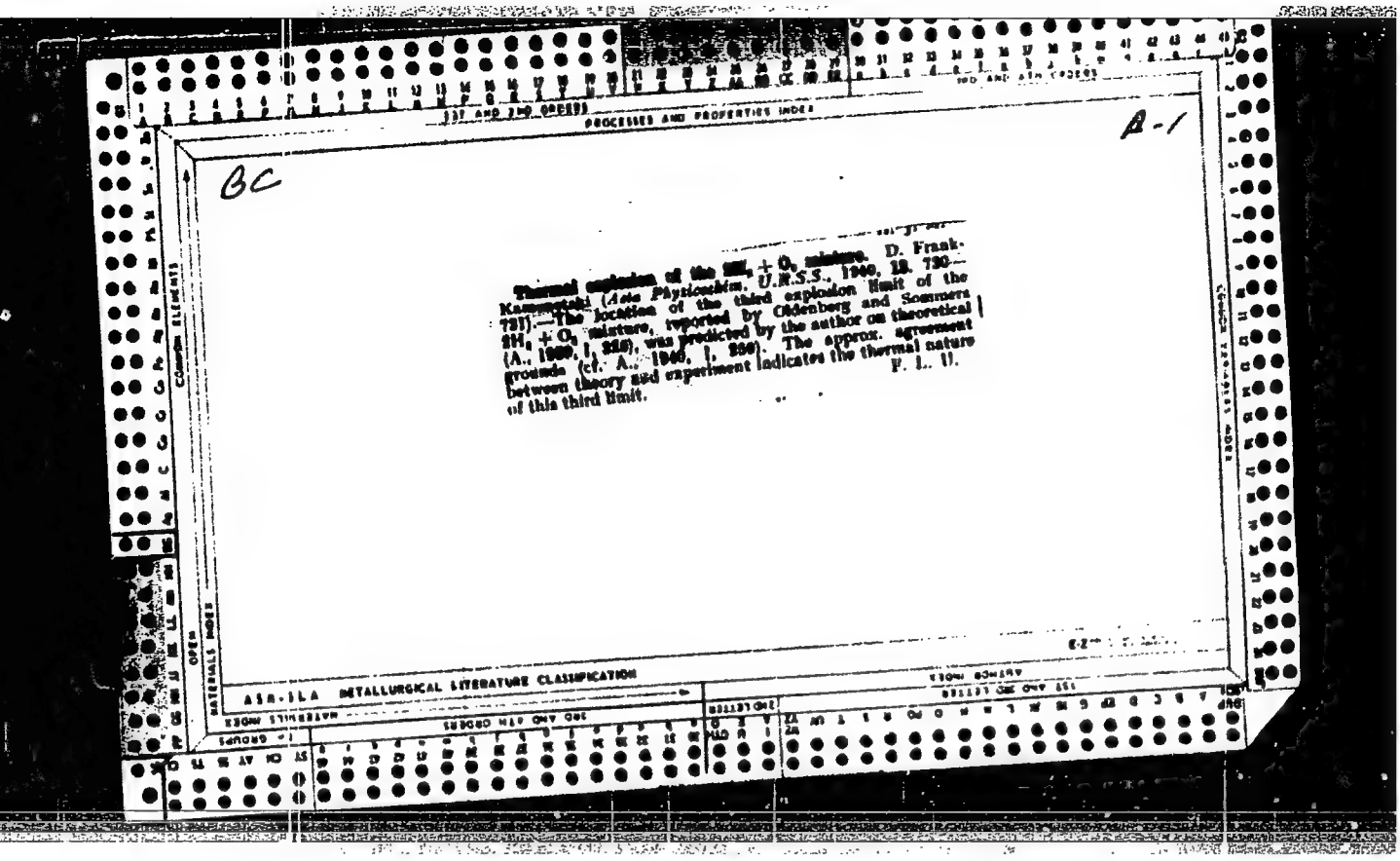

Thermal explosion of the $SiH_4 + O_2$ mixture. D. Frank-Kamenetskii (*Acta Physicochim. U.R.S.S.*, 1940, **13**, 730—731).—The location of the third explosion limit of the $SiH_4 + O_2$ mixture, reported by Oldenberg and Sommers (A., 1939, I, 248), was predicted by the author on theoretical grounds (cf. A., 1940, I, 236). The approx. agreement between theory and experiment indicates the thermal nature of this third limit. F. L. U.

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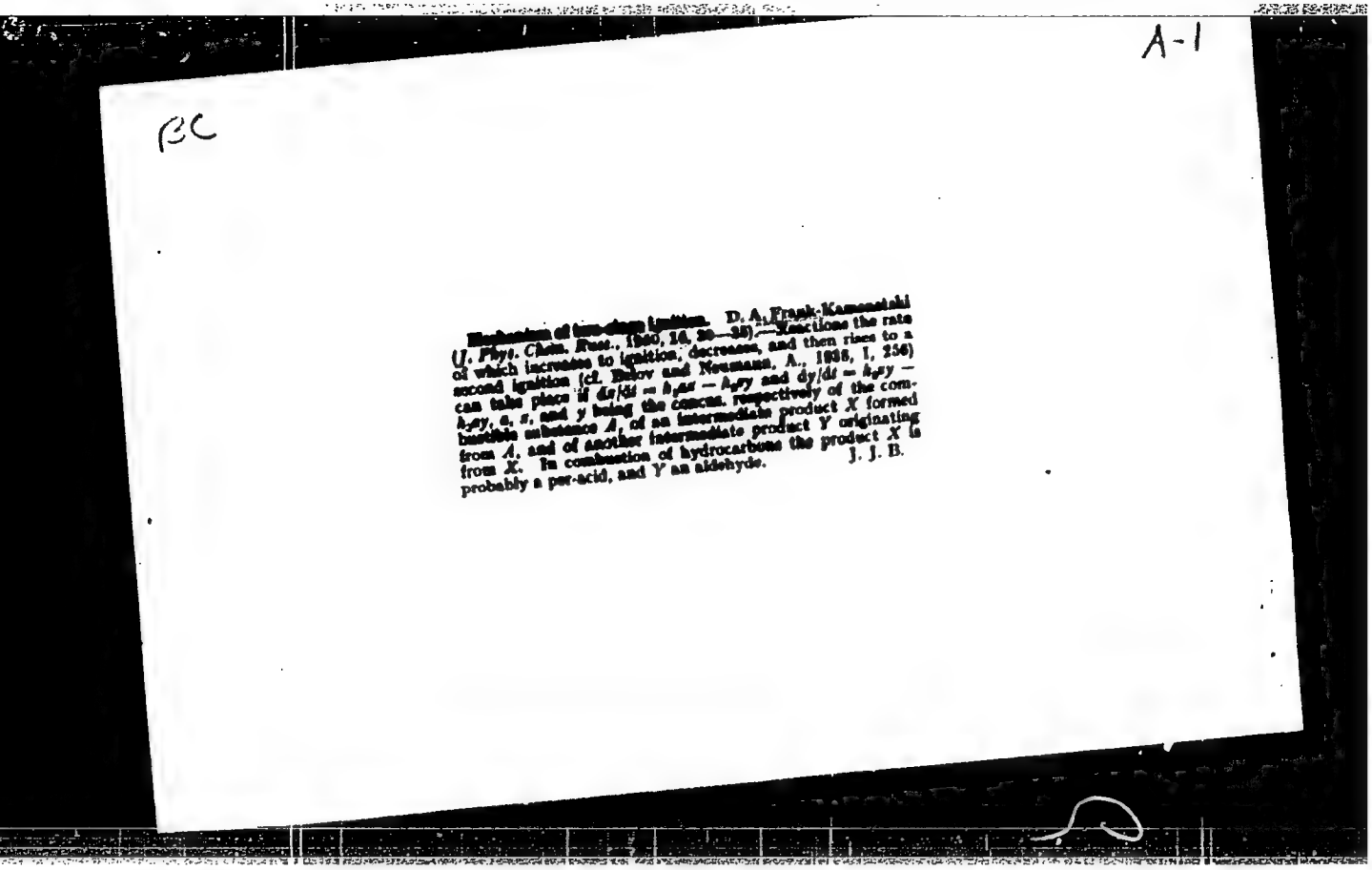

A-1

BC

Mechanism of low-temp ignition. D. A. Frank-Kamenetskii (*J. Phys. Chem. Russ.*, 1940, 14, 26—38).—Reactions the rate of which increases to ignition, decreases, and then rises to a second ignition (cf. Belov and Neumann, A., 1938, I, 256) can take place if $dx/dt = k_1\alpha x - k_2\gamma y$ and $dy/dt = k_3\gamma y - k_4\alpha y$, α, γ, and y being the concns. respectively of the combustible substance A, of an intermediate product Y originating from A, and of another intermediate product X formed from X. In combustion of hydrocarbons the product X is probably a per-acid, and Y an aldehyde. J. J. B.

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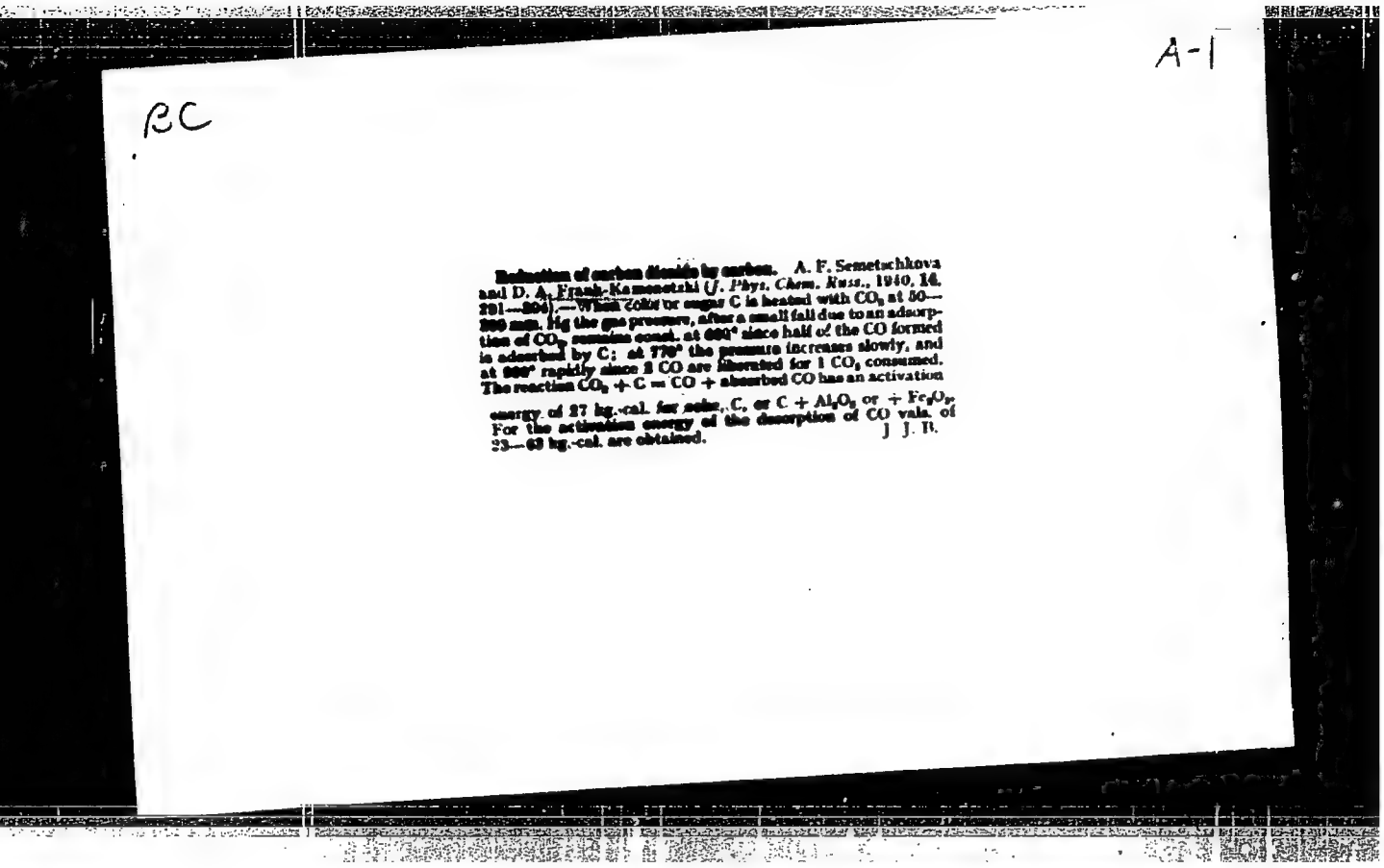

A-1

RC

Reduction of carbon dioxide by carbon. A. F. Semetschkova and D. A. Frank-Kamenetzki *J. Phys. Chem. Russ.*, 1940, 14, 291—294).—When coke or sugar C is heated with CO_2 at 50—200 mm. Hg the gas pressure, after a small fall due to an adsorption of CO_2, remains const. at 600° since half of the CO formed is adsorbed by C; at 770° the pressure increases slowly, and at 800° rapidly since 2 CO are liberated for 1 CO_2 consumed. The reaction $CO_2 + C = CO +$ absorbed CO has an activation energy of 27 kg.-cal. for coke, C, or $C + Al_2O_3$ or $+ Fe_2O_3$. For the activation energy of the desorption of CO vals. of 23—63 kg.-cal. are obtained. J. J. B.

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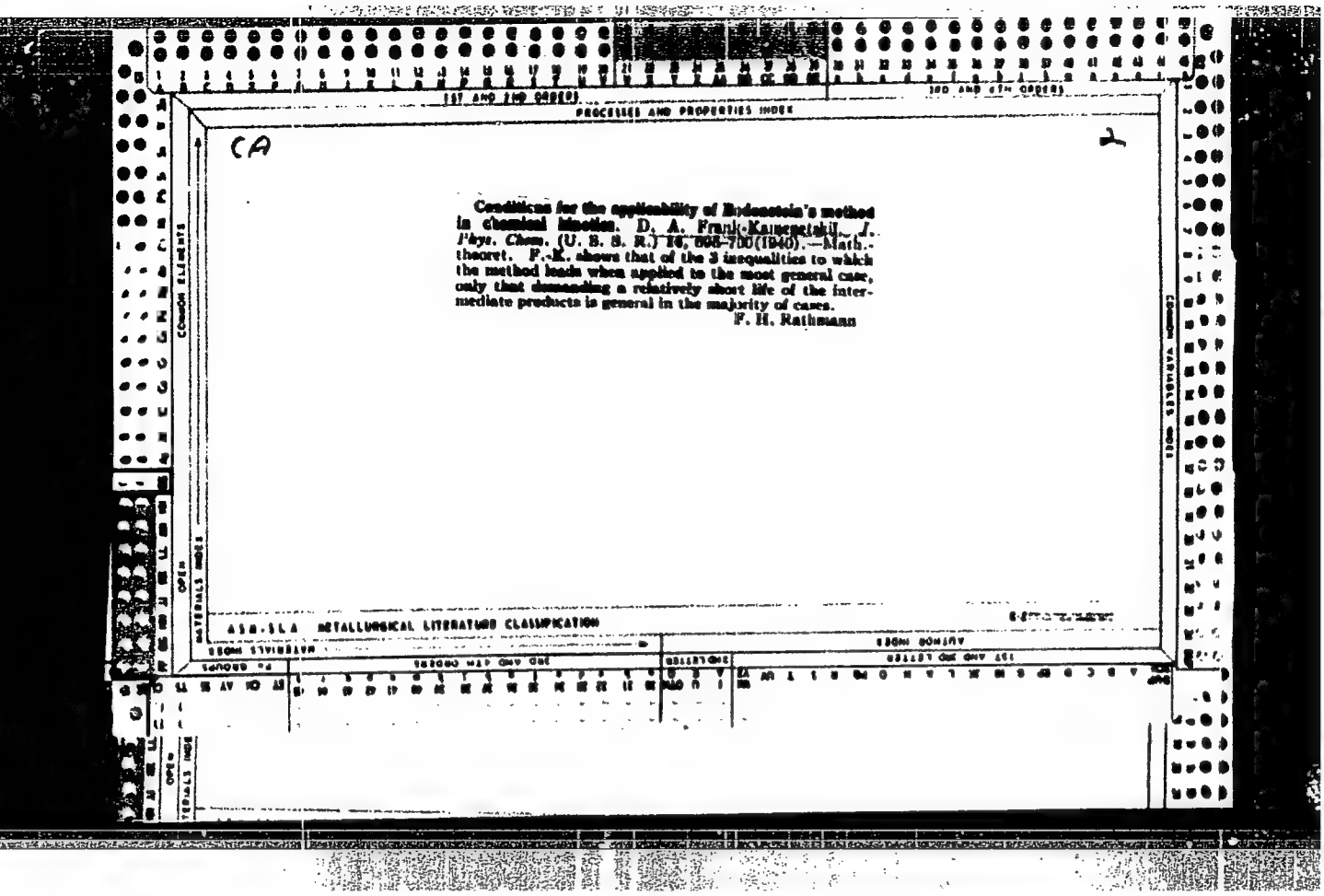

PROCESSES AND PROPERTIES INDEX

CA

2

Conditions for the applicability of Bodenstein's method in chemical kinetics. D. A. Frank-Kamenetskiĭ. *J. Phys. Chem.* (U. S. S. R.) 14, 695–700 (1940).—Math.-theoret. F.-K. shows that of the 3 inequalities to which the method leads when applied to the most general case, only that demanding a relatively short life of the intermediate products is general in the majority of cases.
F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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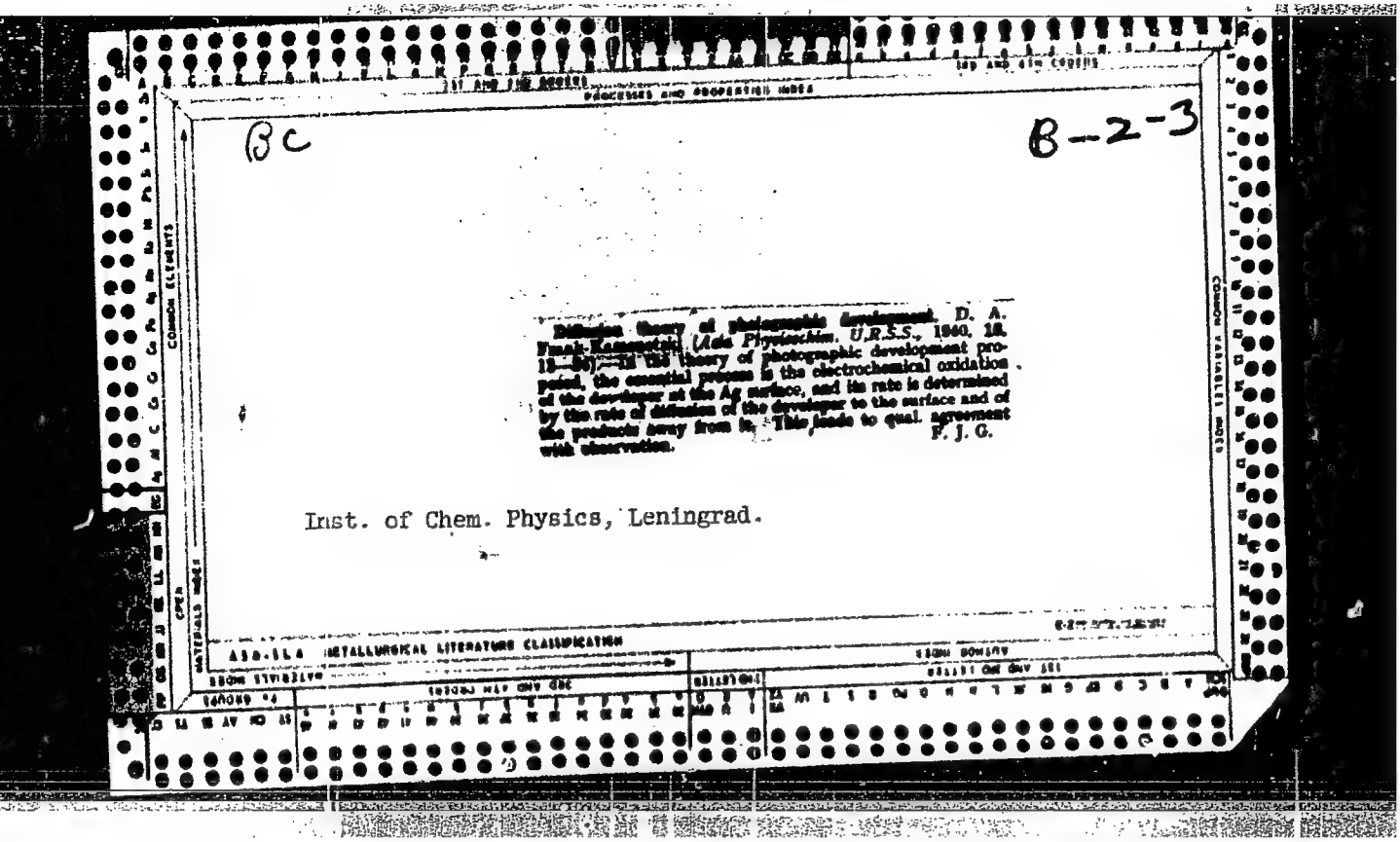

Bc

B-2-3

Diffusion theory of photographic development. D. A. Frank-Kamenetskii (*Acta Physiochim. U.R.S.S.*, 1940, 13, 13—36).—The theory of photographic development proposed, the essential process is the electrochemical oxidation of the developer at the Ag surface, and its rate is determined by the rate of diffusion of the developer to the surface and of the products away from it. This leads to qual. agreement with observation. F. J. G.

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A50-11A METALLURGICAL LITERATURE CLASSIFICATION

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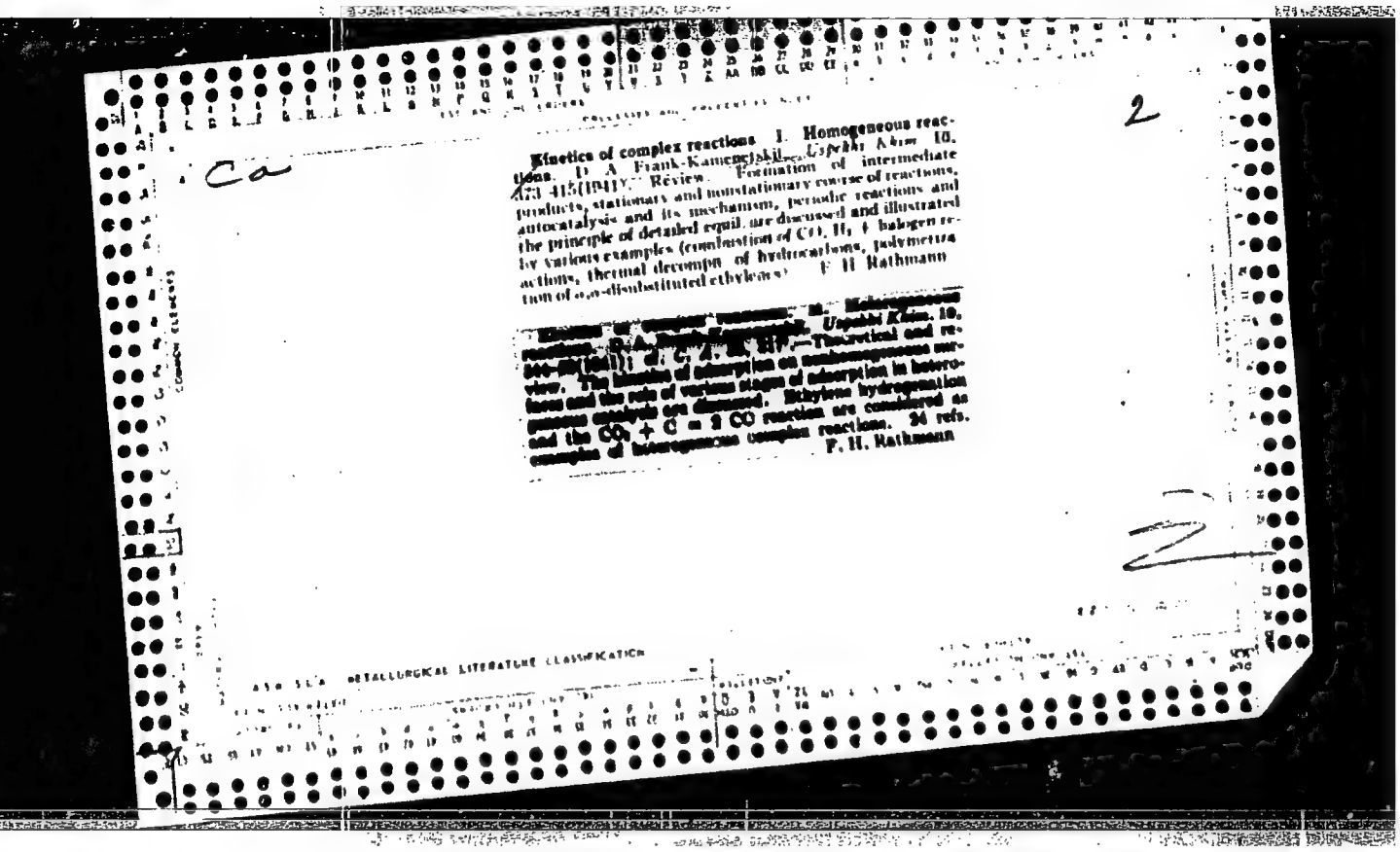

Kinetics of complex reactions. I. Homogeneous reactions. D. A. Frank-Kamenetskii. *Uspekhi Khim.* 10, 423-415(1941).—Review. Formation of intermediate products, stationary and nonstationary course of reactions, autocatalysis and its mechanism, periodic reactions and the principle of detailed equil. are discussed and illustrated by various examples (combination of CO, H_2, + halogen reactions, thermal decompn. of hydrocarbons, polymerization of α,α-disubstituted ethylenes). P. H. Rathmann

[illegible] reactions. D. A. Frank-Kamenetskii. *Uspekhi Khim.* 10, 416-30(1941).—Theoretical and review. The kinetics of adsorption on nonhomogeneous surfaces and the role of various stages of adsorption in heterogeneous catalysis are discussed. Ethylene hydrogenation and the $CO_2 + C = 2\,CO$ reaction are considered as examples of heterogeneous complex reactions. 34 refs. P. H. Rathmann

METALLURGICAL LITERATURE CLASSIFICATION

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Ignition and extinction of solid surfaces. D. A. Frank-Kamenetzki (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **30**, 734—737).—An equation for the steady surface temp. during surface reaction is derived, and the conditions of the surroundings for this temp. to be unique are determined. The implications of this with respect to the transition of a reaction from small to large temp. intervals above the surroundings are considered. H. V. S.-R.

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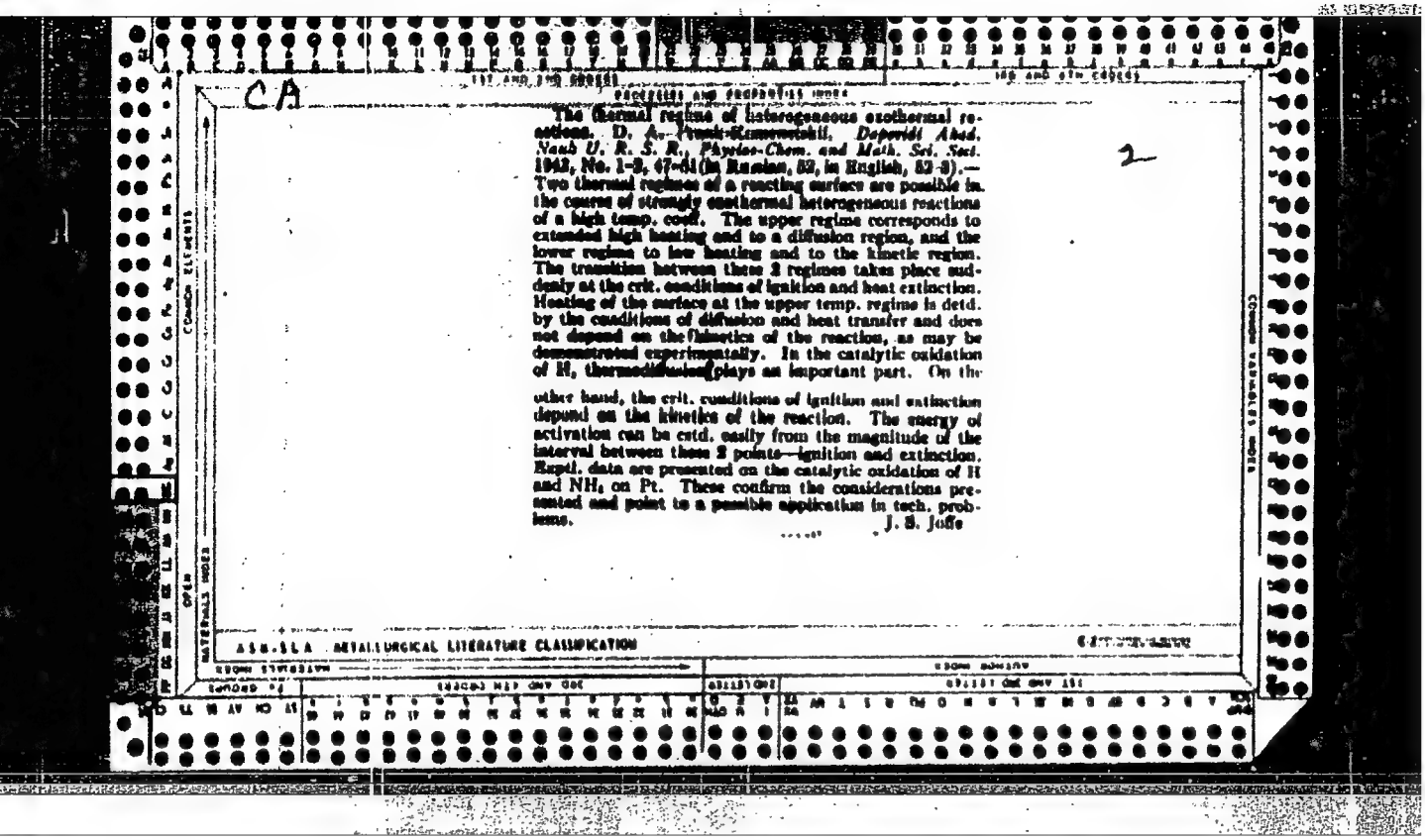

CA

2

The thermal regime of heterogeneous exothermal reactions. D. A. Frank-Kamenetskii. *Doprovid Akad. Nauk U. R. S. R., Physico-Chem. and Math. Sci. Sect.* 1942, No. 1-2, 47-51 (in Russian, 52, in English, 52-3).—Two thermal regimes of a reacting surface are possible in the course of strongly exothermal heterogeneous reactions of a high temp. coeff. The upper regime corresponds to extended high heating and to a diffusion region, and the lower regime to low heating and to the kinetic region. The transition between these 2 regimes takes place suddenly at the crit. conditions of ignition and heat extinction. Heating of the surface at the upper temp. regime is detd. by the conditions of diffusion and heat transfer and does not depend on the kinetics of the reaction, as may be demonstrated experimentally. In the catalytic oxidation of H, thermodiffusion plays an important part. On the other hand, the crit. conditions of ignition and extinction depend on the kinetics of the reaction. The energy of activation can be estd. easily from the magnitude of the interval between these 2 points—ignition and extinction. Exptl. data are presented on the catalytic oxidation of H and NH_3 on Pt. These confirm the considerations presented and point to a possible application in tech. problems.

J. S. Joffe

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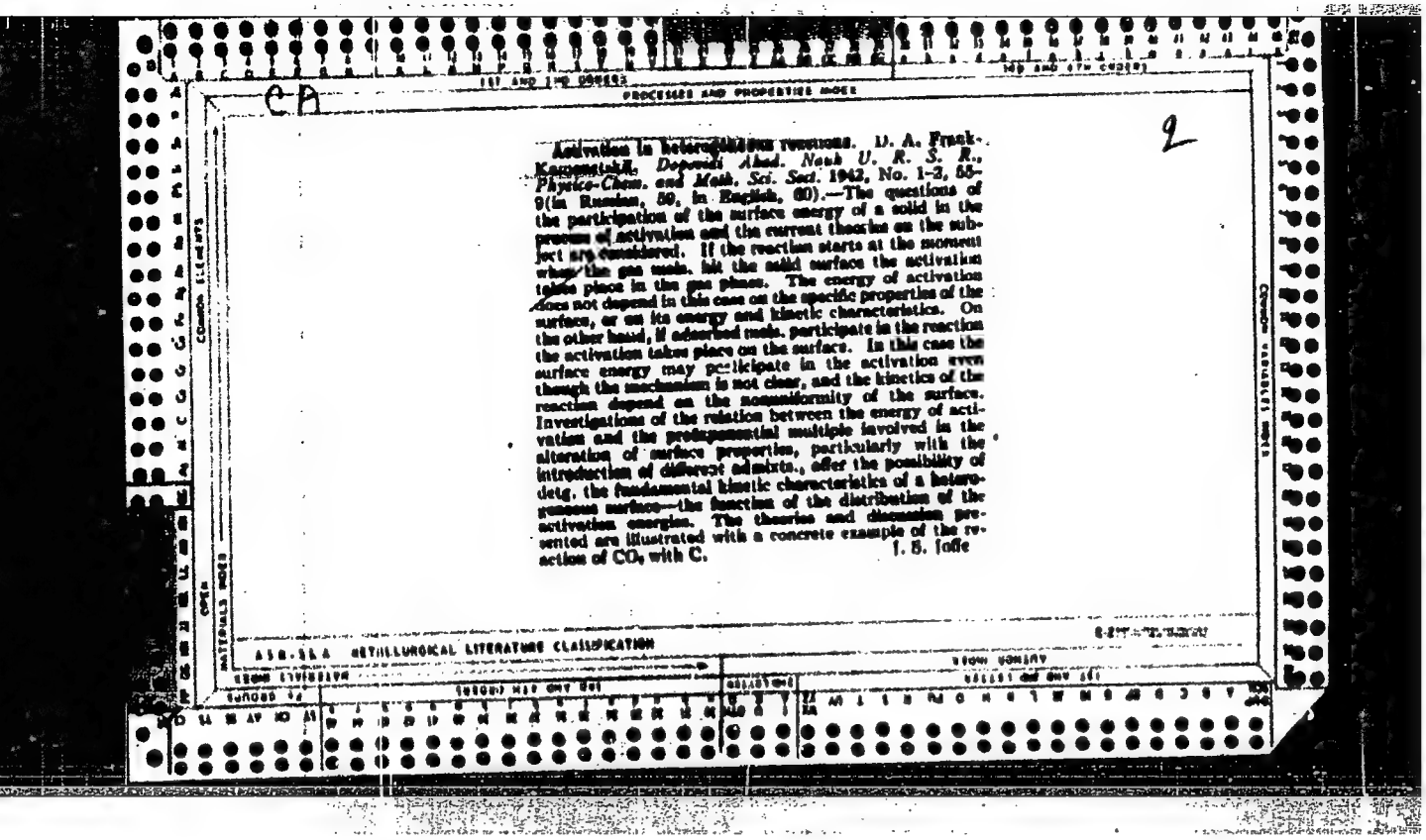

CA

2

Activation in heterogeneous reactions. D. A. Frank-Kamenetskii. *Doposidi Akad. Nauk U. R. S. R., Physico-Chem. and Math. Sci. Sect.* 1942, No. 1-2, 55-9(in Russian, 59, in English, 60).—The questions of the participation of the surface energy of a solid in the process of activation and the current theories on the subject are considered. If the reaction starts at the moment when the gas reacts, but the solid surface the activation takes place in the gas phase. The energy of activation does not depend in this case on the specific properties of the surface, or on its energy and kinetic characteristics. On the other hand, if adsorbed reacts. participate in the reaction the activation takes place on the surface. In this case the surface energy may participate in the activation even though the mechanism is not clear, and the kinetics of the reaction depend on the nonuniformity of the surface. Investigations of the relation between the energy of activation and the predispersial multiple involved in the alteration of surface properties, particularly with the introduction of different admixts., offer the possibility of detg. the fundamental kinetic characteristics of a heterogeneous surface—the function of the distribution of the activation energies. The theories and discussion presented are illustrated with a concrete example of the reaction of CO_2 with C.

I. B. Ioffe

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No. 4

Periodic reactions and the mechanism of hydrocarbon oxidation. I. G. Gervart and D. A. Frank-Kamenetskii (*Bull. Acad. Sci. U.R.S.S., Cl. Sci. Chim.*, 1945, 210—230).—The passage of a mixture of higher hydrocarbons and air (or O_2) through a turbulent reaction chamber causes, within a suitable temp. range, regular pulsations of cold flame. The frequency of these is almost independent of the type of fuel or of its concn. but increases sharply with a rise in temp. or of $[O_2]$. Experiments were carried out with straight-run, polymer, and by-product (from synthetic rubber manufacture) gasolines. The optimum temp. for the occurrence of pulsations was 360°, with a range of 301—445°, this being widest for fuels of high olefine content. The duration of the pulsations is 2·6—20 sec., being the greater in the larger of the two reaction vessels used. The excess air coeff. was 0·05—0·23. The data presented, particularly the independence of the pulsation frequency of the rate of fuel feed, confirm the kinetic nature of the phenomenon.

V. B.

Institute of Chemical Physics

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FRANK-KAMENETSKIY, D. A.

"Theory of Vapor Condensation in the Presence of Noncondensing Gases," Zhur. Tekh. Fiz., 12, No.7, 1942, pp. 327-366.

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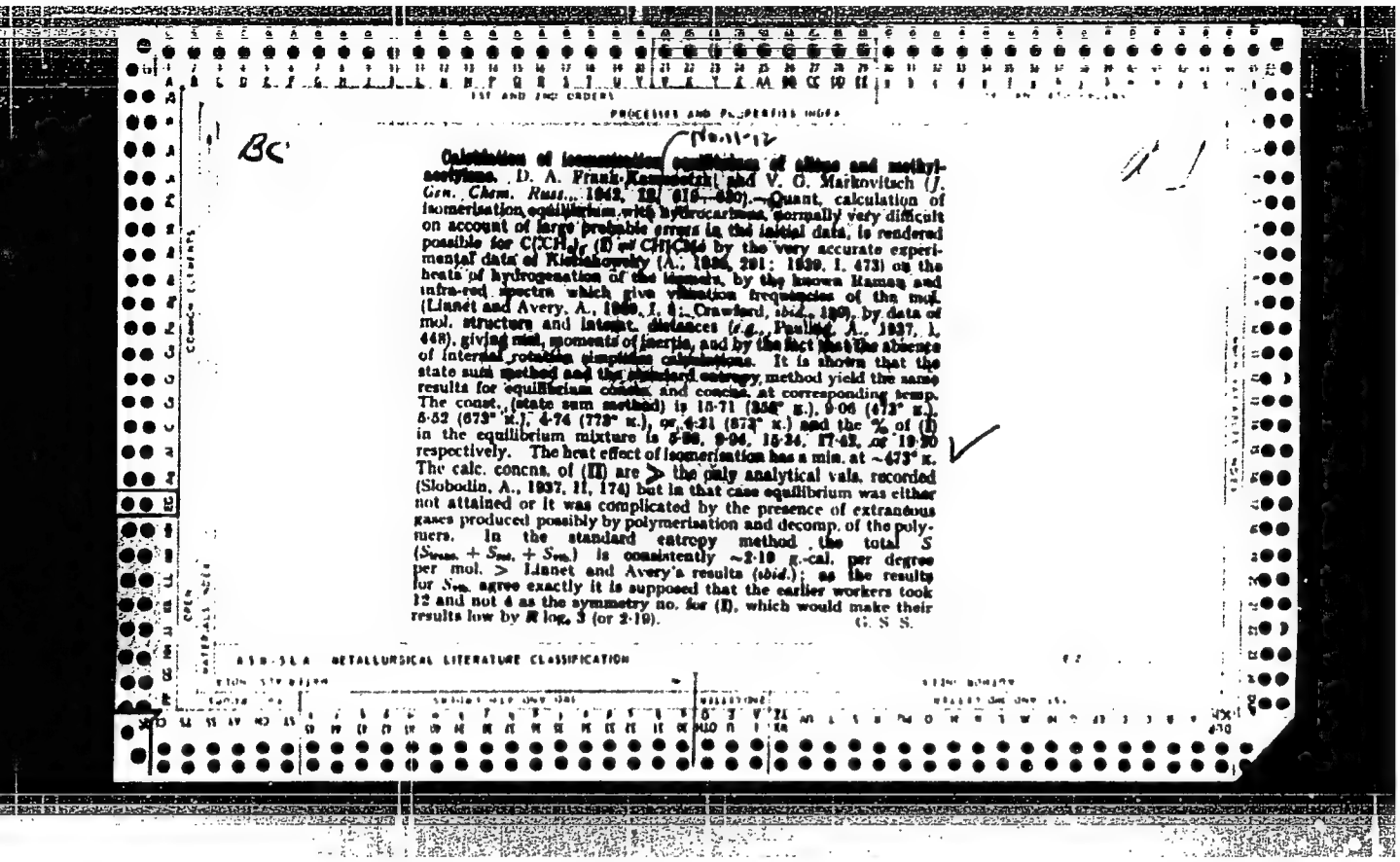

PROCESSES AND PROPERTIES INDEX

Bc

Calculation of isomerisation equilibrium of allene and methylacetylene. D. A. Frank-Kamenetzki and V. G. Markovitsch (*J. Gen. Chem. Russ.*, 1942, **12**, 616—630).—Quant. calculation of isomerisation equilibrium with hydrocarbons, normally very difficult on account of large probable errors in the initial data, is rendered possible for C_3H_4 (I) or CH_2Cl_2 by the very accurate experimental data of Kistiakowsky (A., 1936, 291; 1939, I, 473) on the heats of hydrogenation of the isomers, by the known Raman and infra-red spectra which give vibration frequencies of the mol. (Linnet and Avery, A., 1939, I, 4; Crawford, *ibid.*, 199), by data of mol. structure and interat. distances (*e.g.*, Pauling, A., 1937, I, 448), giving mol. moments of inertia, and by the fact that the absence of internal rotation simplifies calculations. It is shown that the state sum method and the standard entropy method yield the same results for equilibrium consts. and concns. at corresponding temp. The const. (state sum method) is 18·71 (258° K.), 9·06 (473° K.), 5·52 (573° K.), 4·74 (773° K.), or 4·21 (873° K.) and the % of (I) in the equilibrium mixture is 5·08, 9·94, 15·34, 17·42, or 19·20 respectively. The heat effect of isomerisation has a min. at ~473° K. The calc. concns. of (II) are > the only analytical vals. recorded (Slobodin, A., 1937, II, 174) but in that case equilibrium was either not attained or it was complicated by the presence of extraneous gases produced possibly by polymerisation and decomp. of the polymers. In the standard entropy method the total S ($S_{trans.} + S_{rot.} + S_{vib.}$) is consistently ~2·10 g.-cal. per degree per mol. > Linnet and Avery's results (*ibid.*); as the results for $S_{vib.}$ agree exactly it is supposed that the earlier workers took 12 and not 4 as the symmetry no. for (I), which would make their results low by $R \log_e 3$ (or 2·19). G. S. S.

A.S.T.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

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FRANK-KAMENETSKIY, D. K.

"Mathematical Theory of Thermal Explosions," Acta Physicochemica URSS, Vol. 16, pp 357-361, 1942

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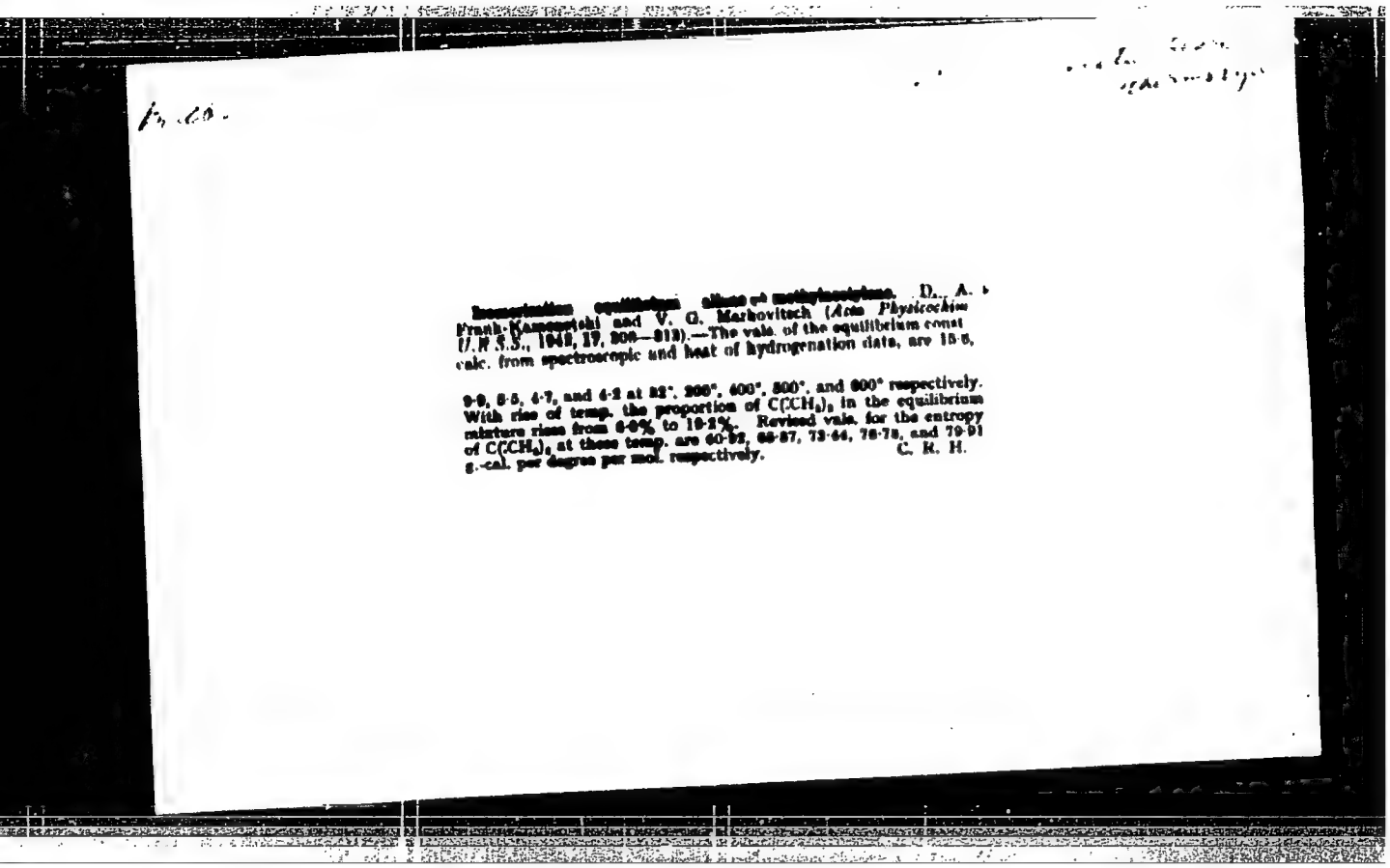

Isomerisation equilibrium of methylacetylene. D. A. Frank-Kamenetskii and V. G. Markovitsch (*Acta Physicochim. U.R.S.S.*, 1943, 19, 308—313).—The value of the equilibrium const. calc. from spectroscopic and heat of hydrogenation data, are 15·6, 9·9, 8·5, 4·7, and 4·2 at 25°, 200°, 400°, 500°, and 900° respectively. With rise of temp. the proportion of $C(CH_3)_3$ in the equilibrium mixture rises from 6·0% to 19·2%. Revised value for the entropy of $C(CH_3)_3$ at these temp. are 60·52, 68·87, 73·64, 76·78, and 79·91 g.-cal. per degree per mol. respectively. C. R. H.

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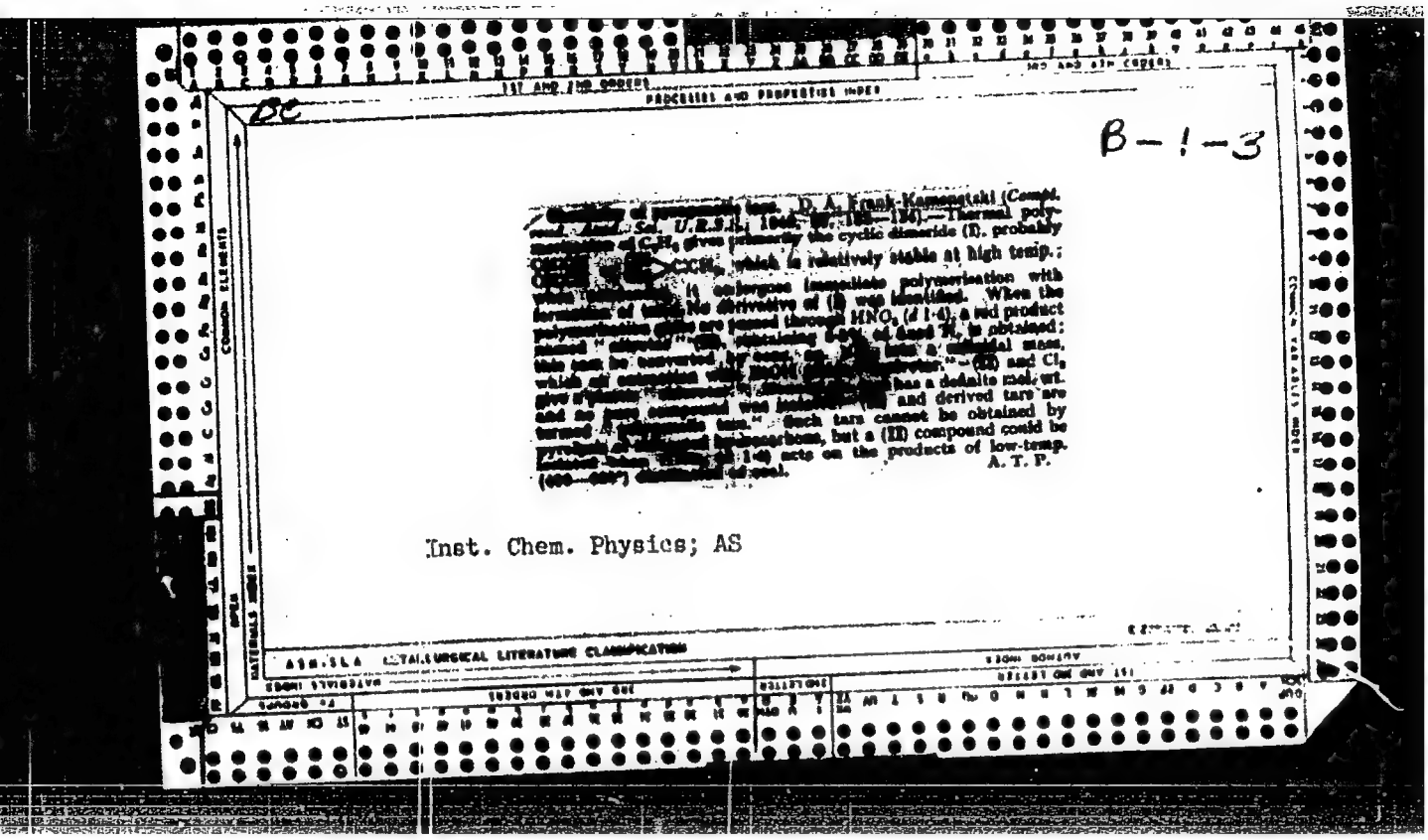

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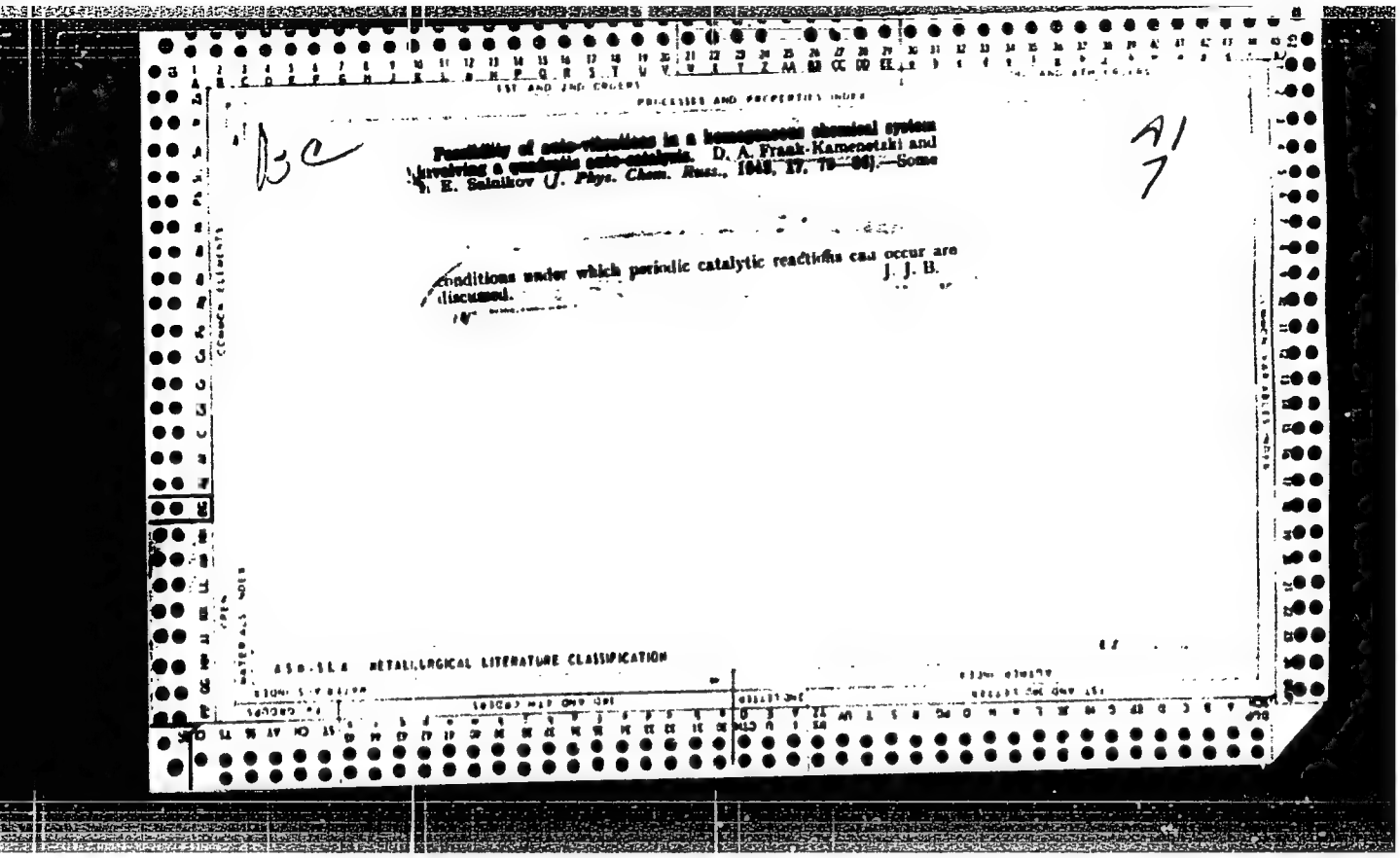

Possibility of auto-vibrations in a homogeneous chemical system involving a quadratic auto-catalysis. D. A. Frank-Kamenetzki and E. Salnikov *J. Phys. Chem. Russ.*, 1948, 17, 79–86).—Some conditions under which periodic catalytic reactions can occur are discussed.

J. J. B.

A1
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ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Kinetics and mechanism of photographic development. D. A. Frank-Kamenetzki (*Acta Physicochim. U.R.S.S.*, 1943, 18, 91—92).—The exponential increase of velocity of linear growth of an individual Ag nucleus with time (Rabinovitsch, A., 1943, I, 93) can be explained on the assumption that rate of development is determined by the electrochemical oxidation of the developer proceeding on the whole surface of the Ag nucleus, the deposition of Ag taking place, however, only on its perimeter. The theory of Anastasevitsch (ibid, 95) is discussed.

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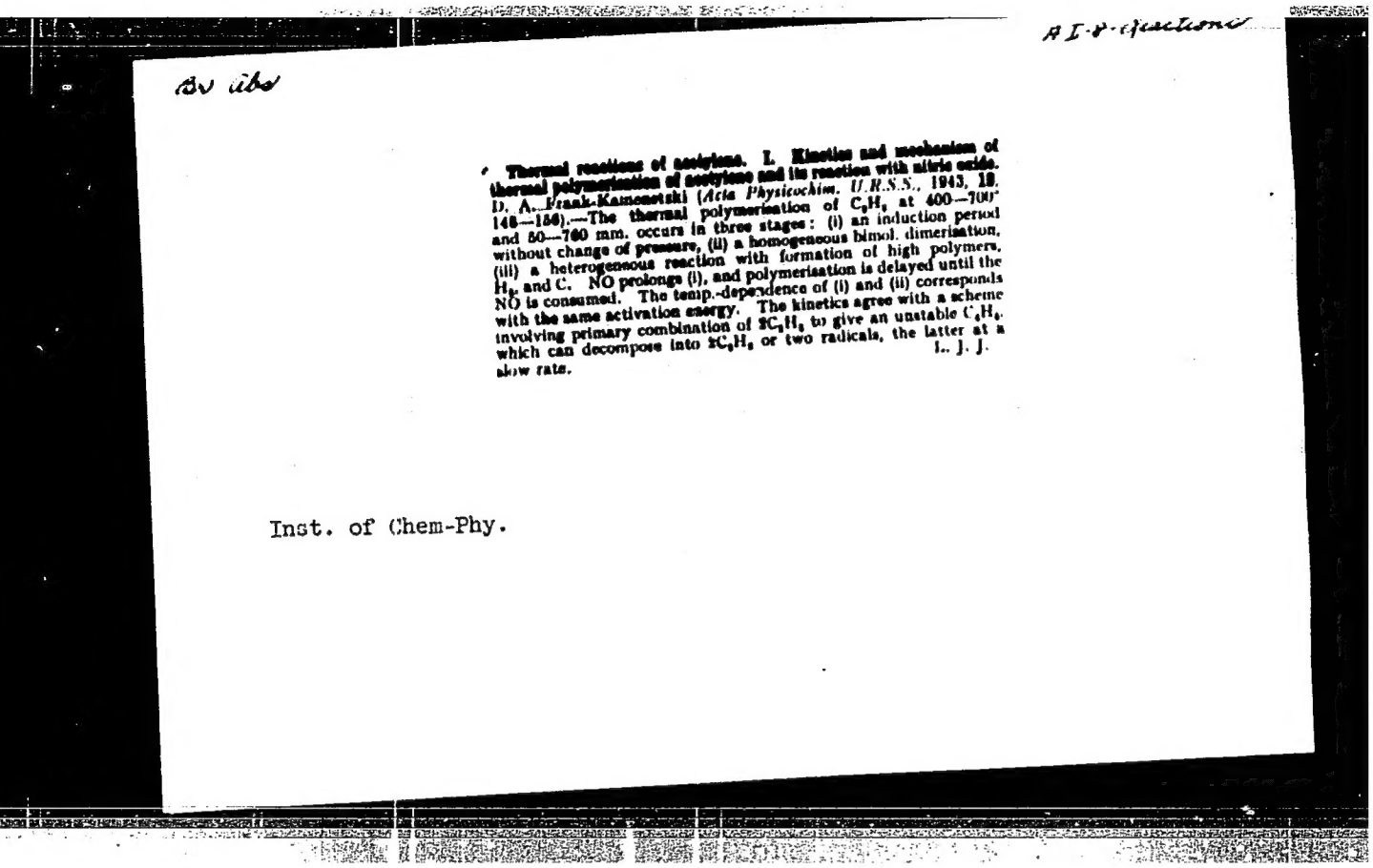

AI-8-Reactions

By abs

Thermal reactions of acetylene. I. Kinetics and mechanism of thermal polymerisation of acetylene and its reaction with nitric oxide. D. A. Frank-Kamenetzki (*Acta Physicochim. U.R.S.S.*, 1943, **18**, 148—156).—The thermal polymerisation of C_2H_2 at 400—700° and 50—760 mm. occurs in three stages: (i) an induction period without change of pressure, (ii) a homogeneous bimol. dimerisation, (iii) a heterogeneous reaction with formation of high polymers, H_2 and C. NO prolongs (i), and polymerisation is delayed until the NO is consumed. The temp.-dependence of (i) and (ii) corresponds with the same activation energy. The kinetics agree with a scheme involving primary combination of $^1C_2H_2$ to give an unstable C_4H_4, which can decompose into $^1C_2H_2$ or two radicals, the latter at a slow rate. L. J. J.

Inst. of Chem-Phy.

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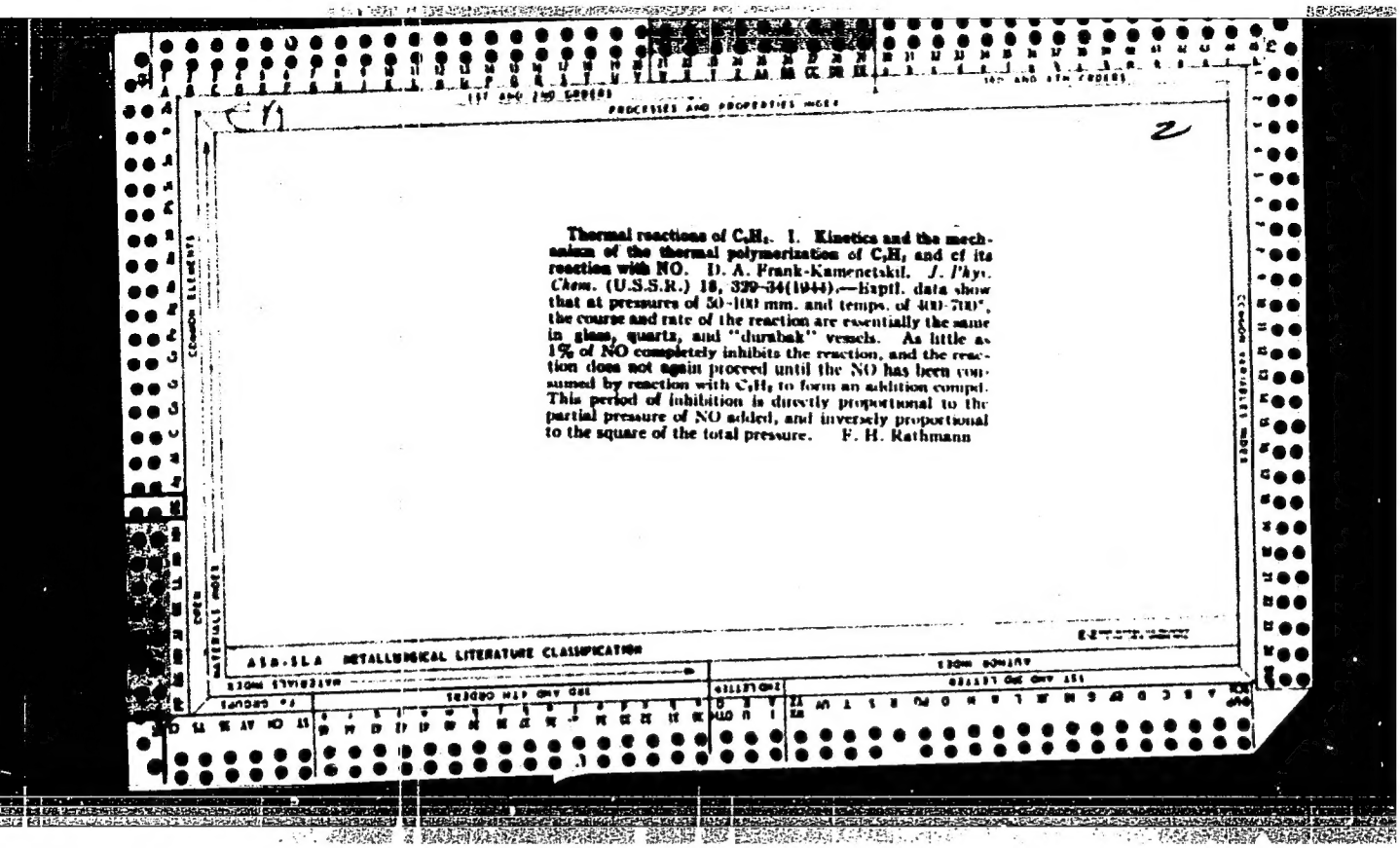

Thermal reactions of C_2H_2. I. Kinetics and the mechanism of the thermal polymerization of C_2H_2 and of its reaction with NO. D. A. Frank-Kamenetskii. *J. Phys. Chem.* (U.S.S.R.) 18, 329-34(1944).—Exptl. data show that at pressures of 50-100 mm. and temps. of 400-700°, the course and rate of the reaction are essentially the same in glass, quartz, and "durabak" vessels. As little as 1% of NO completely inhibits the reaction, and the reaction does not again proceed until the NO has been consumed by reaction with C_2H_2 to form an addition compd. This period of inhibition is directly proportional to the partial pressure of NO added, and inversely proportional to the square of the total pressure. F. H. Rathmann

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Bul. Abs.

II-8, Reactions

Ignition of carbon and kinetics of its reaction with oxygen. A. Klibanova and D. Frank-Kamenetzki (Acta Physicochim. U.R.S.S., 1943, 18, 387-405). - The kinetics of the reaction between C and O_2 at ordinary pressure and at high temp. have been measured by a method based on the determination of the temp. which a C filament must attain before it ignites in a stream of air or other O_2-containing gas. The abs. reaction velocity at ~ 1200°K. is ~ 10^{-4} mol. per c.c. per sec., a val. of the same order as is obtained by other methods. The present data show a temp.-dependence which suggests an activation energy ≫ energies previously reported. The present val. is 75-135 kg.-cal. per mol., corresponding with a reaction order 0·4— 0·8, and definitely < 1.

C.R.H.

AS USSR, Inst. of Chem-Phy

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